



ITMS Implementation Best Practices & Review

Brian Sheedy

Sr. Principal TEC, Endpoint Management



SMP/SQL Implementation & Design



ITMS Component Design Analysis



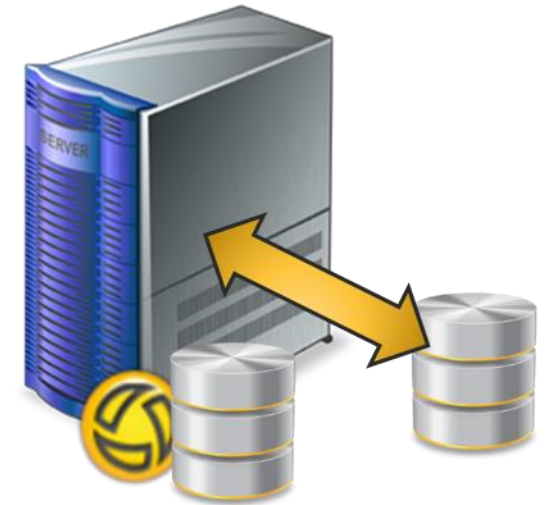
Common Issues that indicate a problem:





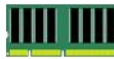




- Incorrectly matched architecture for implementation
- Insufficient configuration for the architecture
- Rollout didn't match design
- Excessive non-essential data movement due to incorrect use case analysis
- Site configuration deficiencies
- IO & resource deficiencies
- Ongoing alignment with use cases and business requirements
 - Growth, Security, compliance & regulation

Notification Server Design Analysis



- **Server Specification is directly proportional to number of managed endpoints**
 - Up to 35,000 Endpoints on a single Notification Server
 - More Cores + More RAM + Faster Disk I/O = Higher managed endpoints



			- 15K
			- 25K
			- 35K

Notification Server Design Analysis

- The Number of solutions utilized affects the maximum endpoint count



45K



&



40K



35K

Notification Server Design Analysis

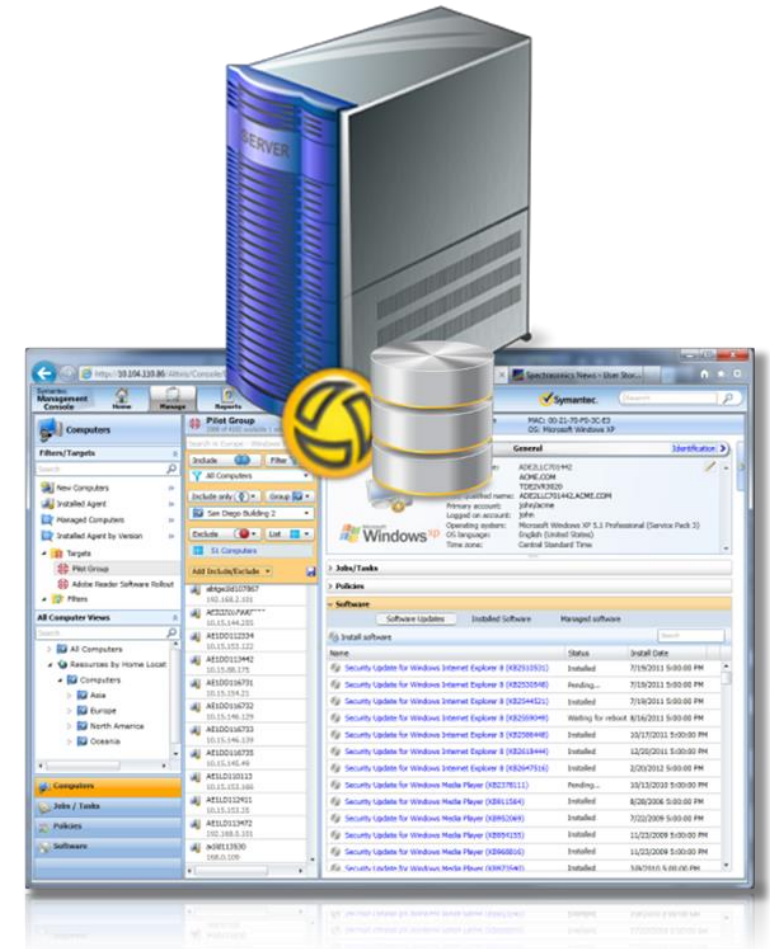
- **Where the MS SQL Server software is installed**
 - This has a direct affect on the number of endpoints a Notification Server can support
 - You should always consider off-box MS SQL Server for more than 5,000 managed endpoints with full ITMS



Notification Server Design Analysis

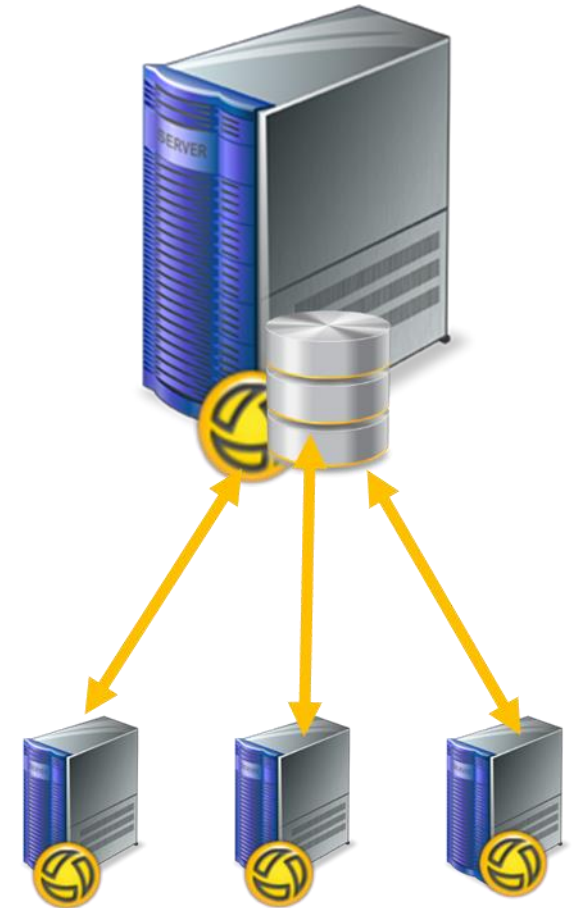


- An Optimized ITMS configuration can increase the number of supported managed endpoints.
 - *This can be achieved by:*
 - Executing less frequent inventory, software, patch and other policies & tasks
 - Spreading tasks across multiple time slots instead of concurrently



Notification Server Design Analysis

- Utilizing Site Servers can increase the supported endpoint count on a Notification Server
 - Multiple Site Servers placed in strategic locations will greatly reduce load on the Notification Server



Notification Server Design Analysis

Notification Server (SQL Off-Box)

Component		100 – 1,000	1,000 – 5,000	5,000 – 10,000	10,000 – 20,000	20,000 – 35,000
PROCESSORS		4+	8 cores	8+ cores	16+ cores	32+ cores
STORAGE	C:	300GB (OS/SMP) + Storage 300 IOPS	100GB (OS) 300 IOPS	100GB (OS) 300 IOPS	100GB (OS) 600 IOPS	100GB (OS) 600 IOPS
	D:		100GB (ITMS App) + Storage 200 IOPS	100GB (ITMS App) + Storage 200 IOPS	100GB (ITMS App) 200 IOPS	100GB (ITMS App) 500 IOPS
	E:				Storage 200 IOPS	Storage 200 IOPS
MEMORY		8 GB	16GB	16 GB	16 GB (24 Parent)	32 GB

Notification Server (SQL On-Box)

Component		1 - 1,000	1,000 – 5,000	> 5,000
PROCESSORS		8 Cores	12 - 16 cores	Not Recommended
STORAGE	C:	200GB (OS, ITMS) + Storage 300 IOPS	100GB (OS) 300 IOPS	
	D:	200GB (SQL) 200 IOPS	100GB (ITMS App) + Storage 300 IOPS	
	E:		200GB (SQL + DB) 300 IOPS	
	F:		200GB (Tlogs, TempDB) 300 IOPS	
MEMORY		8-16 GB	20GB	

Notification Server Design Analysis

Notification Server (SQL Off-Box)

Component		100 – 1,000	1,000 – 5,000	5,000 – 10,000	10,000 – 20,000	20,000 – 35,000
PROCESSORS		4+	8 cores	8+ cores	16+ cores	32+ cores
STORAGE	C:	300GB (OS/SMP) + Storage 300 IOPS	100GB (OS) 300 IOPS	100GB (OS) 300 IOPS	100GB (OS) 600 IOPS	100GB (OS) 600 IOPS
	D:		100GB (ITMS App) + Storage 200 IOPS	100GB (ITMS App) + Storage 200 IOPS	100GB (ITMS App) 200 IOPS	100GB (ITMS App) 500 IOPS
	E:				Storage 200 IOPS	Storage 200 IOPS
MEMORY		8 GB	16GB	16 GB	16 GB (24 Parent)	32 GB

On Box or
Off-Box
SQL?

Notification Server (SQL On-Box)

Component		1 - 1,000	1,000 – 5,000	> 5,000
PROCESSORS		8 Cores	12 - 16 cores	Not Recommended
STORAGE	C:	200GB (OS, ITMS) + Storage 300 IOPS	100GB (OS) 300 IOPS	
	D:	200GB (SQL) 200 IOPS	100GB (ITMS App) + Storage 300 IOPS	
	E:		200GB (SQL + DB) 300 IOPS	
	F:		200GB (Tlogs, TempDB) 300 IOPS	
MEMORY		8-16 GB	20GB	

Notification Server Design Analysis




Notification Server (SQL Off-Box)

Component		100 – 1,000	1,000 – 5,000	5,000 – 10,000	10,000 – 20,000	20,000 – 35,000
PROCESSORS		4+	8 cores	8+ cores	16+ cores	32+ cores
STORAGE	C:	300GB (OS/SMP) + Storage 300 IOPS	100GB (OS) 300 IOPS	100GB (OS) 300 IOPS	100GB (OS) 600 IOPS	100GB (OS) 600 IOPS
	D:		100GB (ITMS App) + Storage 200 IOPS	100GB (ITMS App) + Storage 200 IOPS	100GB (ITMS App) 200 IOPS	100GB (ITMS App) 500 IOPS
	E:				Storage 200 IOPS	Storage 200 IOPS
	F:		8 GB	16GB	16 GB (24 Parent)	32 GB

Less Resources

Notification Server (SQL On-Box)

Component		1 - 1,000	1,000 – 5,000	> 5,000
PROCESSORS		8 Cores	12 - 16 cores	
STORAGE	C:	200GB (OS, ITMS) + Storage 300 IOPS	100GB (OS) 300 IOPS	Not Recommended 
	D:	200GB (SQL) 200 IOPS	100GB (ITMS App) + Storage 300 IOPS	
	E:		200GB (SQL + DB) 300 IOPS	
	F:		200GB (Tlogs, TempDB) 300 IOPS	
		8-16 GB	20GB	

More Resources

Notification Server Design Analysis



Notification Server (SQL Off-Box)

Component		100 – 1,000	1,000 – 5,000	5,000 – 10,000	10,000 – 20,000	20,000 – 35,000
PROCESSORS		4+	8 cores	8+ cores	16+ cores	32+ cores
STORAGE	C:	1 300 GB (OS/SQL) + Storage 200 IOPS Drive	100GB (OS) 300 IOPS	100GB (OS) 300 IOPS	100GB (OS) 600 IOPS	100GB (OS) 600 IOPS
	D:		2 100GB (ITMS App) + Storage 200 IOPS Drives	100GB (ITMS App) + Storage 200 IOPS	3 100GB (ITMS App) 200 IOPS Drives	100GB (ITMS App) 500 IOPS
	E:					
MEMORY		8 GB	16GB	16 GB	16 GB (24 Parent)	32 GB

Notification Server (SQL On-Box)

Component		1 - 1,000	1,000 – 5,000	> 5,000
PROCESSORS		8 Cores	12 - 16 cores	!! <i>Not Recommended</i>
STORAGE	C:	200GB (OS, ITMS) + Storage 300 IOPS	100GB (OS) 300 IOPS	
	D:	200GB (SQL) 200 IOPS	100GB (ITMS App) + Storage 300 IOPS	
	E:		200GB (SQL + DB) 300 IOPS	
	F:		200GB (Logs, TempDB) 300 IOPS	
MEMORY		8-16 GB	20GB	

Notification Server Design Analysis

Notification Server (SQL Off-Box)

Component		100 – 1,000	1,000 – 5,000	5,000 – 10,000	10,000 – 20,000	20,000 – 35,000
PROCESSORS		4+	8 cores	8+ cores	16+ cores	32+ cores
STORAGE	C:	300GB (OS/SMP) + Storage 300 IOPS	100GB (OS) 300 IOPS	100GB (OS) 300 IOPS	100GB (OS) 600 IOPS	100GB (OS) 600 IOPS
	D:		100GB (ITMS App) + Storage 200 IOPS	100GB (ITMS App) + Storage 200 IOPS	100GB (ITMS App) 200 IOPS	100GB (ITMS App) 500 IOPS
	E:				Storage 200 IOPS	Storage 200 IOPS
MEMORY		8 GB	16GB	16 GB	16 GB (24 Parent)	32 GB

Notification Server (SQL On-Box)

Component		1 - 1,000	1,000 – 5,000	> 5,000
PROCESSORS		8 Cores	12 - 16 cores	Not Recommended
STORAGE	C:	200GB (OS, ITMS) + Storage 300 IOPS	100GB (OS) 300 IOPS	
	D:	200GB (SQL) 200 IOPS	100GB (ITMS App) + Storage 300 IOPS	
	E:		200GB (SQL + DB) 300 IOPS	
	F:		200GB (Tlogs, TempDB) 300 IOPS	
MEMORY		8-16 GB	20GB	

SQL Server Design Analysis

- MS SQL is responsible for most of ITMS Operation



SQL Server Design Analysis

- MS SQL is responsible for most of ITMS Operation
- Is the SQL Server Database Sized Properly?
 - Initially, you can expect 8MB/endpoint +10%
 - i.e. 5,000 Endpoints x 8MB = 40GB + 4GB = 44GB CMDB minimum



SQL Server Design Analysis

- MS SQL is responsible for most of ITMS Operation
- Is the SQL Server Database Sized Properly?
 - Initially, you can expect 8MB/endpoint +10%
 - i.e. 5,000 Endpoints x 8MB = 40GB + 4GB = 44GB CMDB minimum
 - Beyond Initial Creation, account for:
 - Fragmentation
 - Number of Solutions
 - Policies, tasks schedules



SQL Server Design Analysis

- How is the SQL Server Implemented?



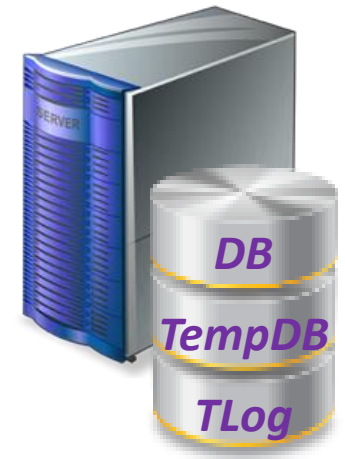
SQL Server Design Analysis

- **How is the SQL Server Implemented?**
 - Modern Storage like SSD Drives or PCIe Flash Cards?



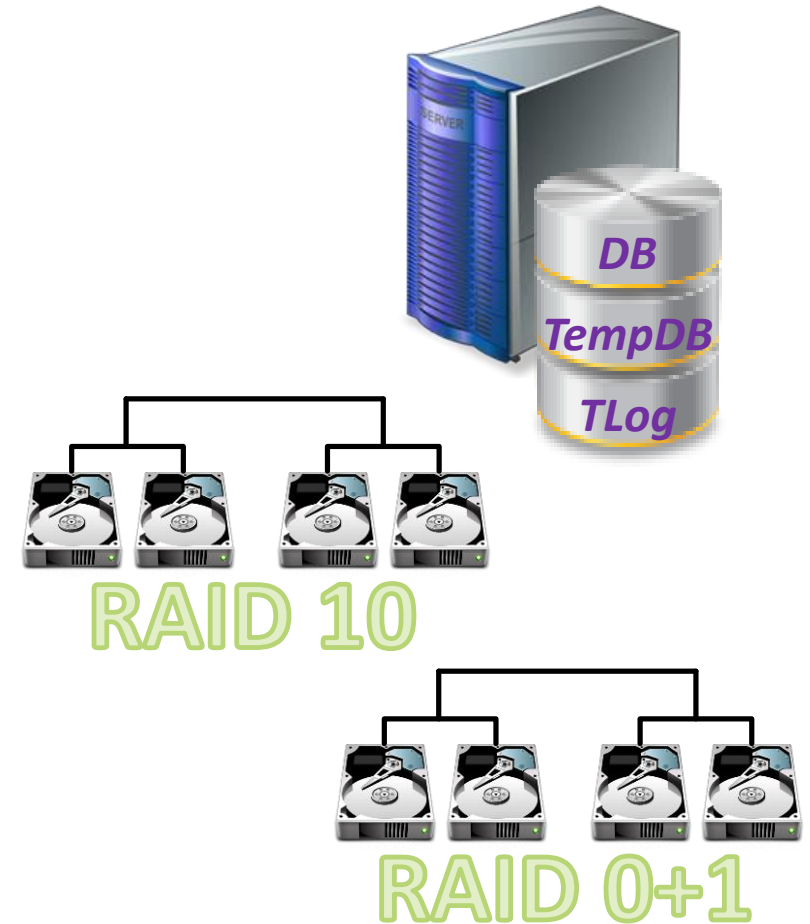
SQL Server Design Analysis

- How is the SQL Server Implemented?
 - Modern Storage like SSD Drives or PCIe Flash Cards?
 - Separated SQL Application, DB, TempDB and Transaction Logs?



SQL Server Design Analysis

- How is the SQL Server Implemented?
 - Modern Storage like SSD Drives or PCIe Flash Cards?
 - Separated SQL Application, DB, TempDB and Transaction Logs?
 - Traditional HDDs in use?
 - RAID 10 gives the best performance for Databases/Tlogs
 - RAID 0+1 for TempDB.



SQL Server Design Analysis

Microsoft SQL Server

Component		1 – 1,000	1,000 – 5,000	5,000 – 10,000	10,000 – 20,000	20,000 – 35,000
PROCESSORS		4 cores	8 cores	8-16 cores	16+ cores	32+ cores
Storage	OS + SQL	100GB 180 IOPS	100GB 180 IOPS	100GB 180 IOPS	100GB 180 IOPS	100GB 180 IOPS
	DB	100GB 200 IOPS	200GB 300 IOPS	300GB 400 IOPS	600GB 600 IOPS	800GB 1200 IOPS
	TLogs		100GB 300 IOPS	100GB 400 IOPS	200GB 600 IOPS	300GB 600 IOPS
	TempDB		100GB 200 IOPS	100GB 300 IOPS	200GB 400 IOPS	300GB 1200 IOPS
MEMORY		12 GB	16+ GB	24+ GB	32+ GB	64+ GB

A SQL Server configuration that meets or exceeds the specifications above will result in a better performing ITMS

SQL Server Design Analysis

Microsoft SQL Server

Component		1 – 1,000	1,000 – 5,000	5,000 – 10,000	10,000 – 20,000	20,000 – 35,000
PROCESSORS		4 cores	8 cores	8-16 cores	16+ cores	32+ cores
Storage	OS + SQL	100GB 180 IOPS	100GB 180 IOPS	100GB 180 IOPS	100GB 180 IOPS	100GB 180 IOPS
	DB	200GB 300 IOPS	200GB 300 IOPS	300GB 400 IOPS	600GB 600 IOPS	800GB 1200 IOPS
	TLogs	100GB 200 IOPS	100GB 300 IOPS	100GB 400 IOPS	200GB 600 IOPS	300GB 600 IOPS
	TempDB	100GB 200 IOPS	100GB 200 IOPS	100GB 300 IOPS	200GB 400 IOPS	300GB 1200 IOPS
MEMORY		12 GB	16+ GB	24+ GB	32+ GB	64+ GB

A SQL Server configuration that meets or exceeds the specifications above will result in a better performing ITMS

SQL Server Design Analysis

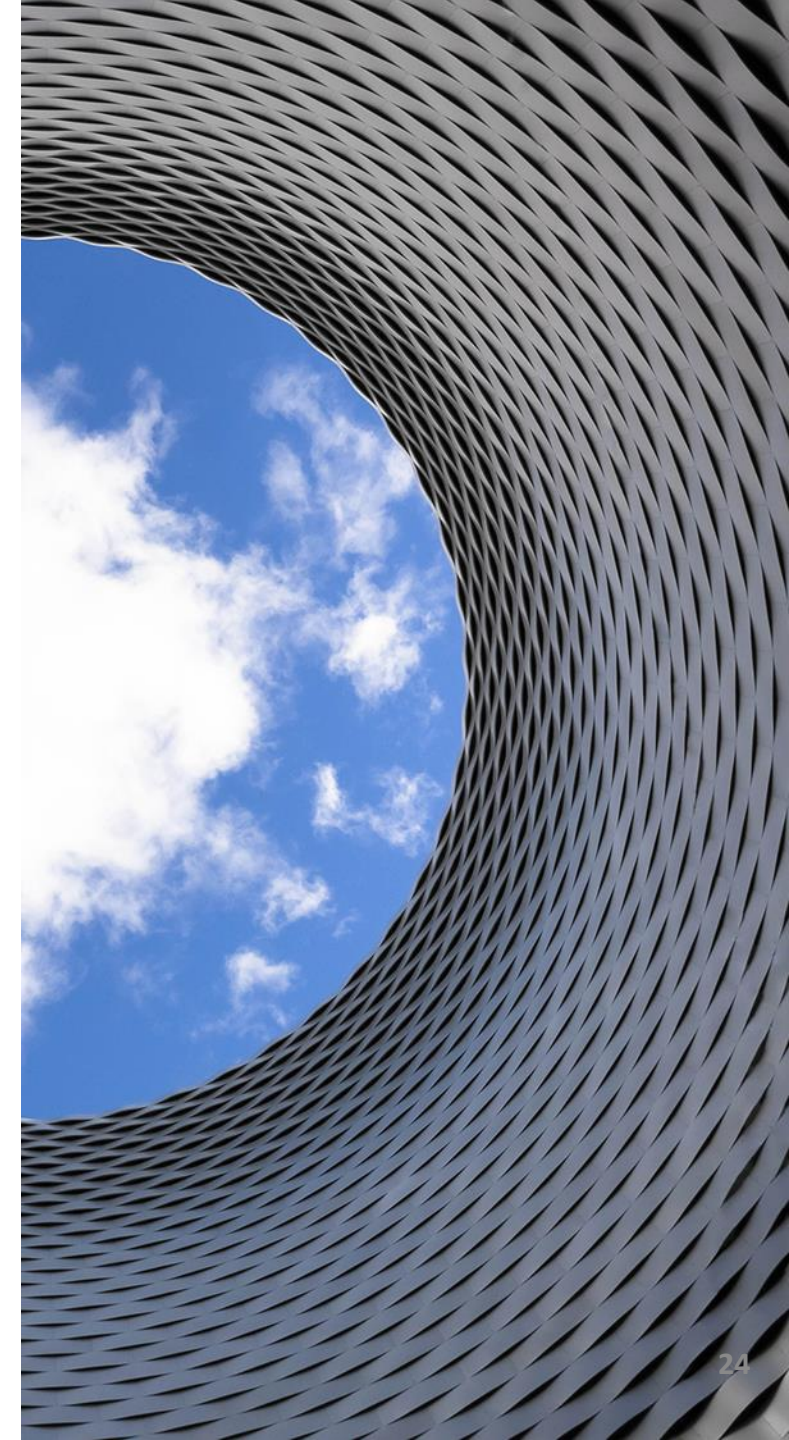


Microsoft SQL
Server

Component		1 – 1,000	1,000 – 5,000	5,000 – 10,000	10,000 – 20,000	20,000 – 35,000
PROCESSORS		4 cores	8 cores	8-16 cores	16+ cores	32+ cores
Storage	OS + SQL	100GB 180 IOPS	100GB 180 IOPS	100GB 180 IOPS	100GB 180 IOPS	100GB 180 IOPS
	DB	100GB 200 IOPS	200GB	300GB	600GB	800GB
			300 IOPS	400 IOPS	600 IOPS	1200 IOPS
	TLogs		100GB	100GB	200GB	300GB
	TempDB		100GB 200 IOPS	100GB 300 IOPS	200GB 400 IOPS	300GB 1200 IOPS
	MEMORY	12 GB	16+ GB	24+ GB	32+ GB	64+ GB

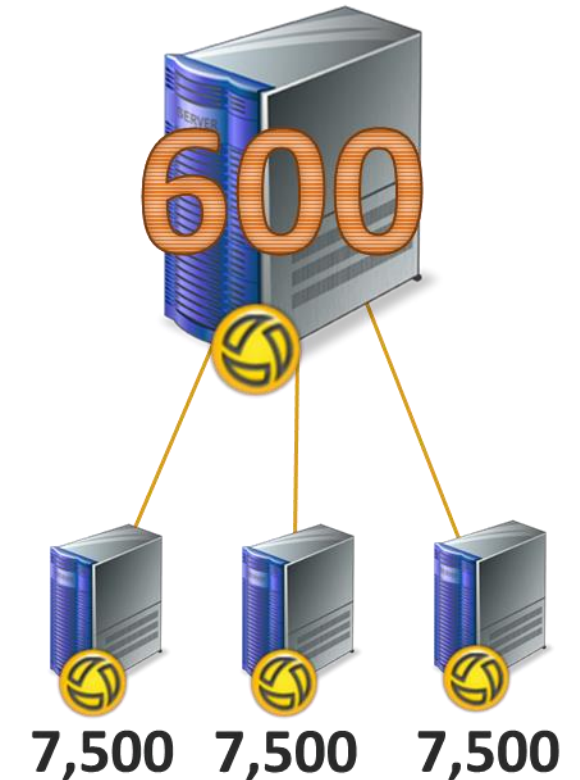
A SQL Server configuration that meets or exceeds the specifications above will result in a better performing ITMS

Site Server Implementation Best Practices



Site Server Design Analysis

- **Hardware is proportional to the number of endpoints**
 - Up to **7,500** Endpoints per Site Server with Server OS and Good HW
 - Up to **600** Site Servers per Notification Server



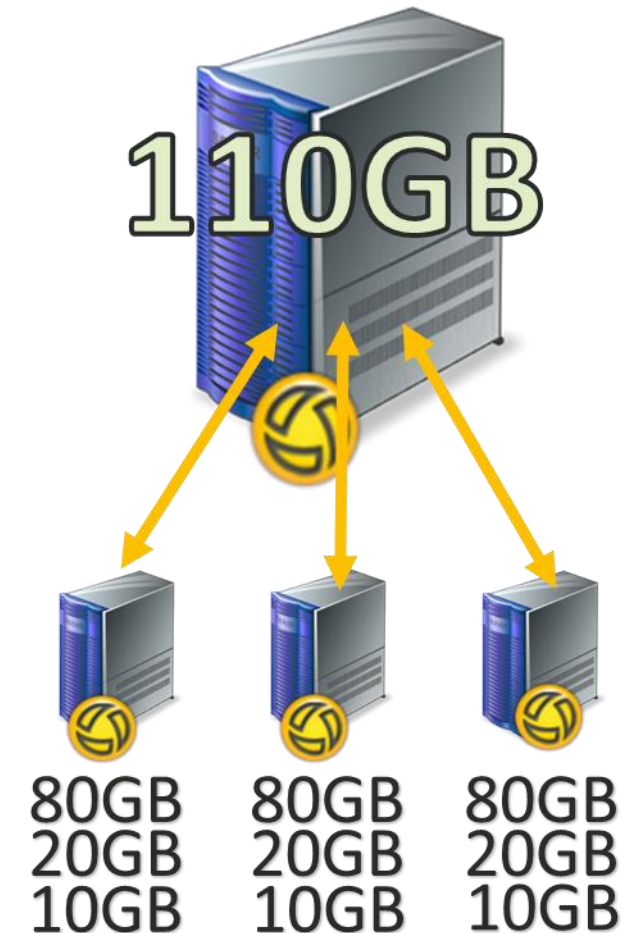
Site Server Design Analysis

- **Consider utilizing existing hardware**
 - An environmentally conscious option
 - Site Servers can be almost any computer or server with sufficient storage space



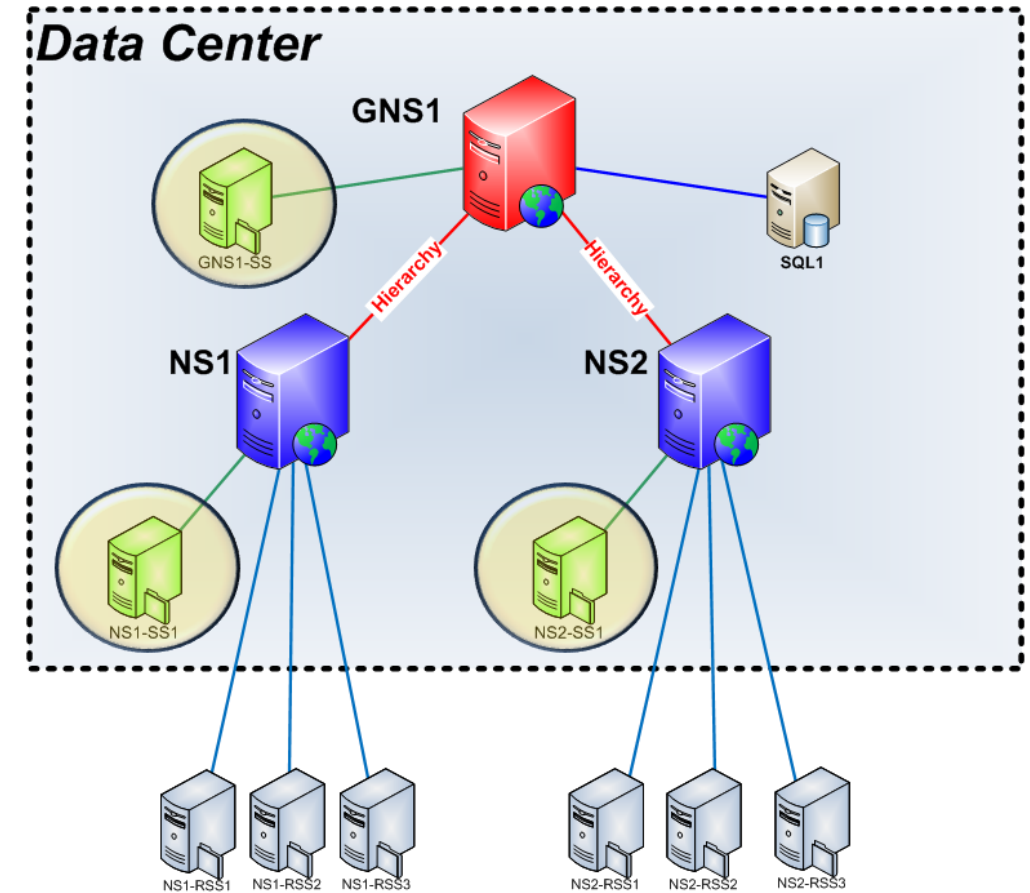
Site Server Design Analysis

- **Number of solutions utilized affects the storage size**
 - Deployment Solution = Image and OS Space
 - Software Management Solution = Application Package Space
 - Patch Management Solution = Software Updates space



Site Server Design Analysis

- **One Site Server for each NS when utilizing Hierarchy**
 - It is mandatory because it is the primary mechanism for inter-Notification communication as well as replication of tasks, events and packages.



Site Server Design Analysis

Site Server		Component	10 – 100	100 – 1,000	3,000 – 5,000	5,000 – 7,500	
		Operating System	Desktop OS	Server OS	Server OS	Server OS	
		Processors	2 core	4 cores	6 cores	8 cores	
		Storage	C:	100GB (OS, SMP) + Storage 200 IOPS	100GB (OS, SMP) + Storage 200 IOPS	100GB (OS) 200 IOPS	100GB (OS) 200 IOPS
			D:			20GB (SMP) + Storage 200 IOPS	20GB (SMP) + Storage 200 IOPS
		Memory	2 GB	4 GB	6 GB	8 GB	

Site Server Design Analysis

Site Server		Component	10 – 100	100 – 1,000	3,000 – 5,000	5,000 – 7,500	
		Operating System	Desktop OS	Server OS	Server OS	Server OS	
		Processors	2 core	4 cores	6 cores	8 cores	
		Storage	C:	100GB (OS, SMP) + Storage 200 IOPS	100GB (OS, SMP) + Storage 200 IOPS	100GB (OS) 200 IOPS	100GB (OS) 200 IOPS
			D:			20GB (SMP) + Storage 200 IOPS	20GB (SMP) + Storage 200 IOPS
		Memory	2 GB	4 GB	6 GB	8 GB	

Site Server Design Analysis

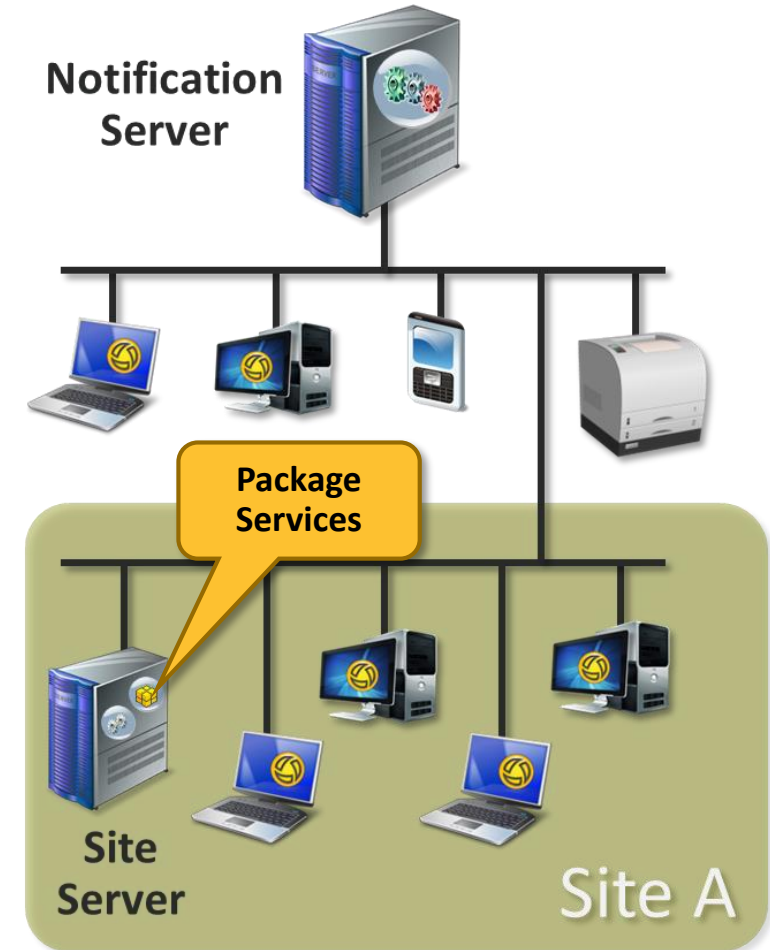
Site Server		Component	10 – 100	100 – 1,000	3,000 – 5,000	5,000 – 7,500	
		Operating System	Desktop OS	Server OS	Server OS	Server OS	
		Processors	2 core	4 cores	6 cores	8 cores	
		Storage	C:	100GB (OS, SMP) + Storage 200 IOPS	100GB (OS, SMP) + Storage 200 IOPS	100GB (OS) 200 IOPS	100GB (OS) 200 IOPS
			D:			20GB (SMP) + Storage 200 IOPS	20GB (SMP) + Storage 200 IOPS
		Memory	2 GB	4 GB	6 GB	8 GB	

Site Server Design Analysis

Site Server		Component	10 – 100	100 – 1,000	3,000 – 5,000	5,000 – 7,500
		Operating System	Desktop OS	Server OS	Server OS	Server OS
		Processors	2 core	4 cores	6 cores	8 cores
		Storage	C:	100GB (OS, SMP) + Storage 200 IOPS	100GB (OS) 200 IOPS	100GB (OS) 200 IOPS
			D:		20GB (SMP) + Storage 200 IOPS	20GB (SMP) + Storage 200 IOPS
		Memory	2 GB	4 GB	6 GB	8 GB

Package Service

- Package servers are deployment mechanisms to efficiently move data into a site.
- Work with the Notification Server as local file servers for managed computers at a site.
- Do not require server-class hardware and software.
- Helps reduce network traffic by allowing a package to copy across the network only once per site.
- You can place a package server locally at a site to store and deliver packages.
 - This architecture can help you manage sites with low-bandwidth connections to Notification Server.



Package Server Considerations



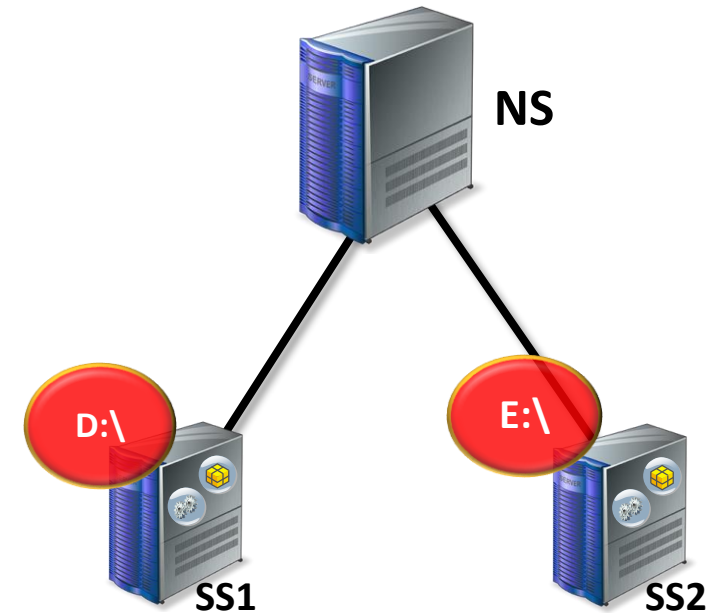
- Fully understand your own network topology and its network traffic capabilities before rolling out Package Servers.



NS

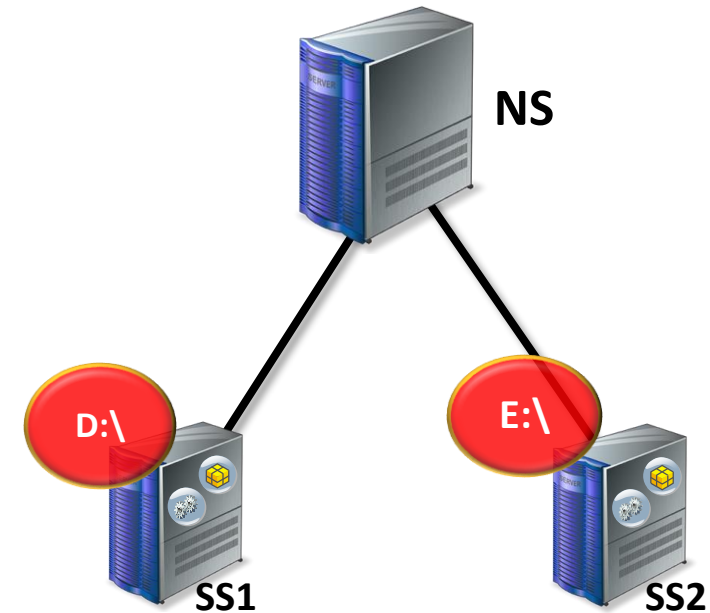
Package Server Considerations

- **Ensure that the Package Service is installed on the proper storage location**
 - Package Service will store files on the drive that the Agent resides on by default
 - Packages will be saved and served from this location until it fills up – then it saves to the next drive.
 - To avoid this issue:
 - Install or Re-Install the agent on an adequate drive



Package Server Considerations

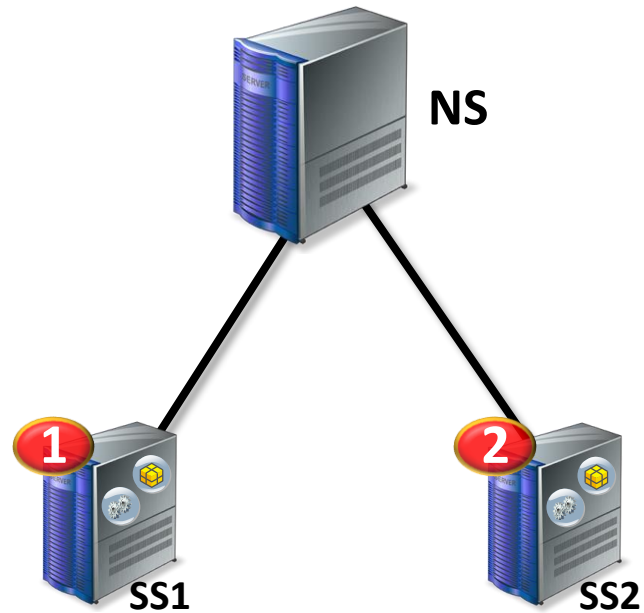
- Ensure that the Package Service is installed on the proper storage location
 - Package Service will store files on the drive that the Agent resides on by default
 - Packages will be saved and served from this location until it fills up – then it saves to the next drive.
 - To avoid this issue:
 - Install or Re-Install the agent on an adequate drive
 - Manually install the agent with proper command line
 1. Copy the file AeXSwdInstSvc.exe from the Notification Server to the desired Site Server Target
 2. Run the following command (note the –d parameter):



AeXSwdInstSvc.exe -u https://NSserver/Altiris/NS/NSCap/Bin/Win32/x86/Ns Client Package/AeXNSC.exe -s "NSserver" -w "http://NSserver/Altiris/" **-d "E:\Program Files\Altiris\Altiris Agent"** -notrayicon –nostartmenu

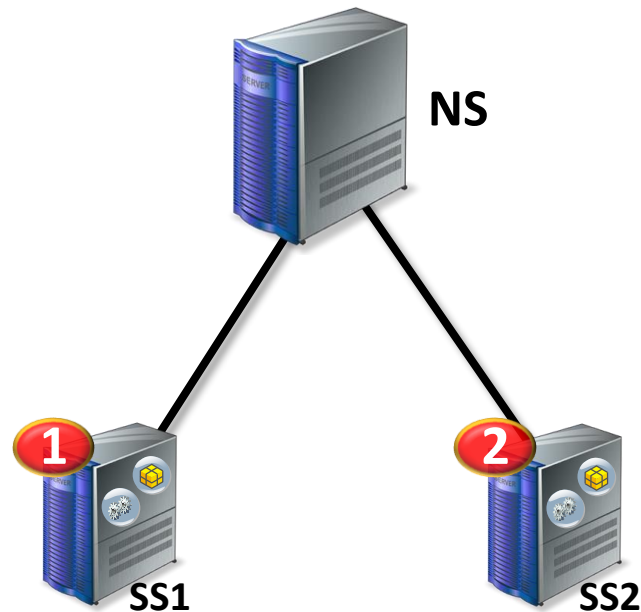
Package Server Considerations

- **Stagger the deployment of Package Servers.**
 - Reduces spikes in network utilization

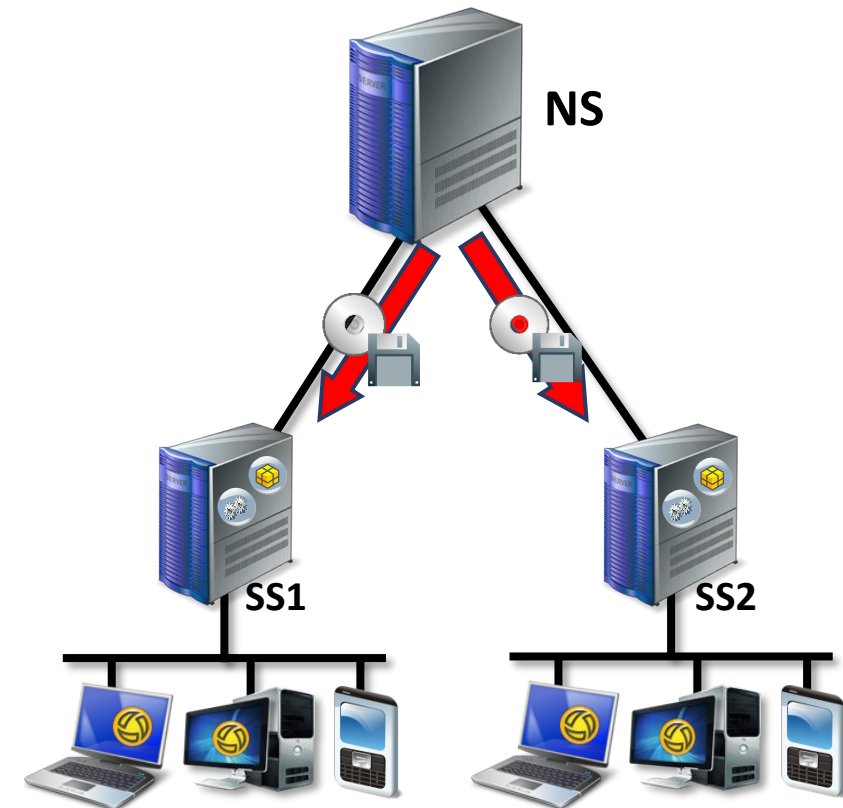


Package Server Considerations

- **Stagger the deployment of Package Servers.**
 - Reduces spikes in network utilization

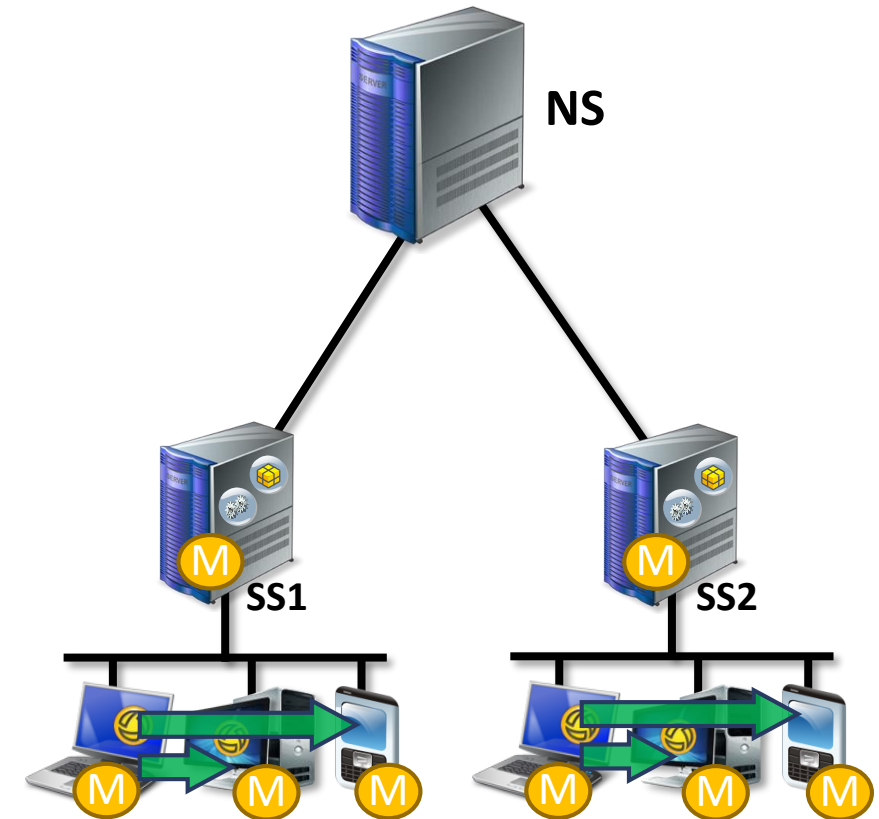


- **Stagger the deployment of Packages to the Site Server**
 - Deploy a few packages at a time on all Package Servers
 - Or deploy a reasonable amount of packages to only a few Package Servers at a time.

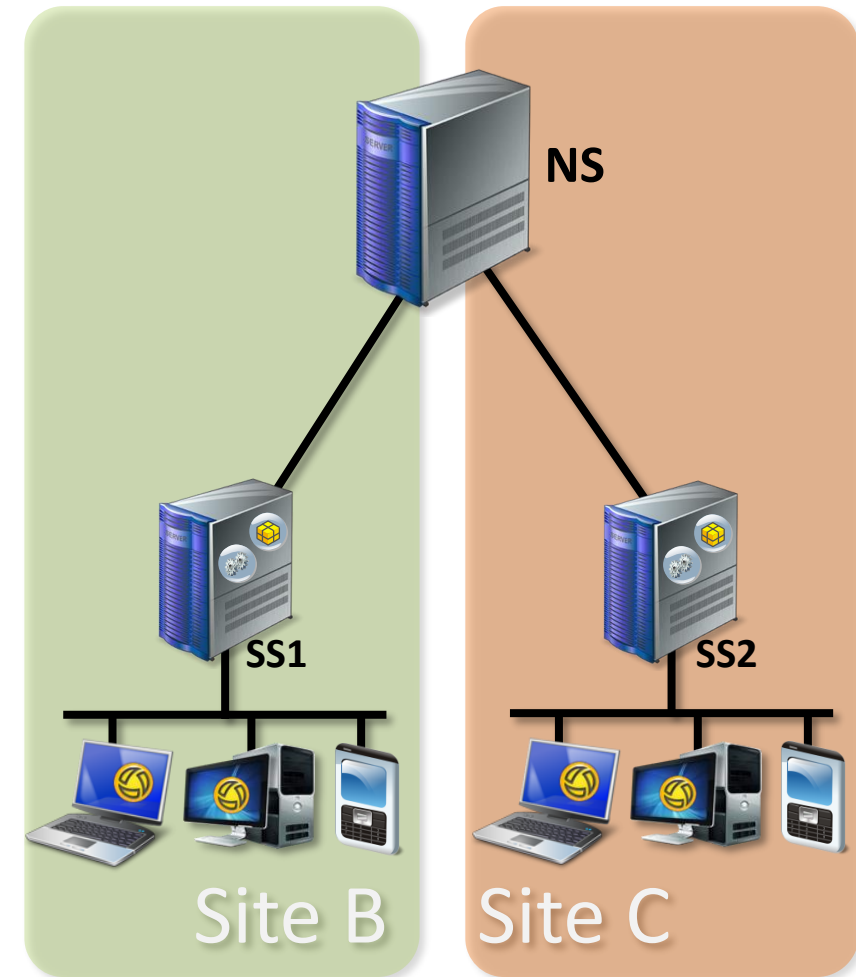


Package Server Considerations

- **Use Package Servers with Multicasting enabled**
 - Can help you optimize your Package Server use
 - Enables efficient delivery of data to many locations on a network
 - Reduces the load on Package Servers by reducing the number of agents that need to connect to and download from Package Servers
 - Decreases network utilization by multicasting package data to peers

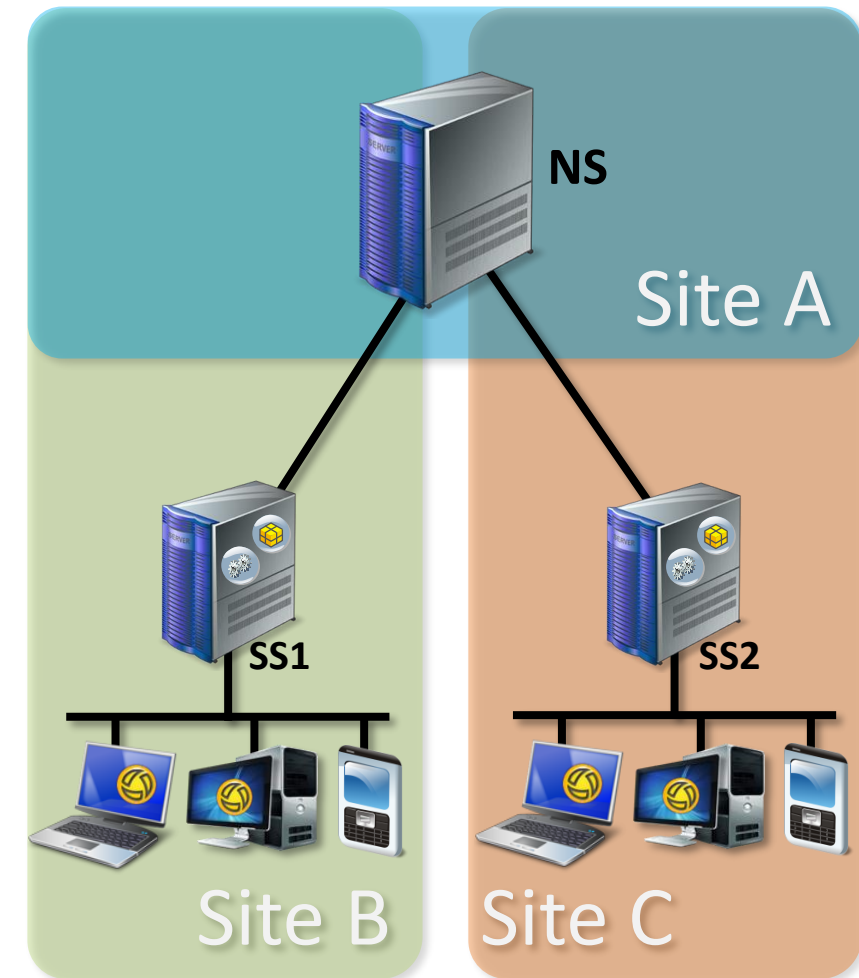


Package Server Implementation



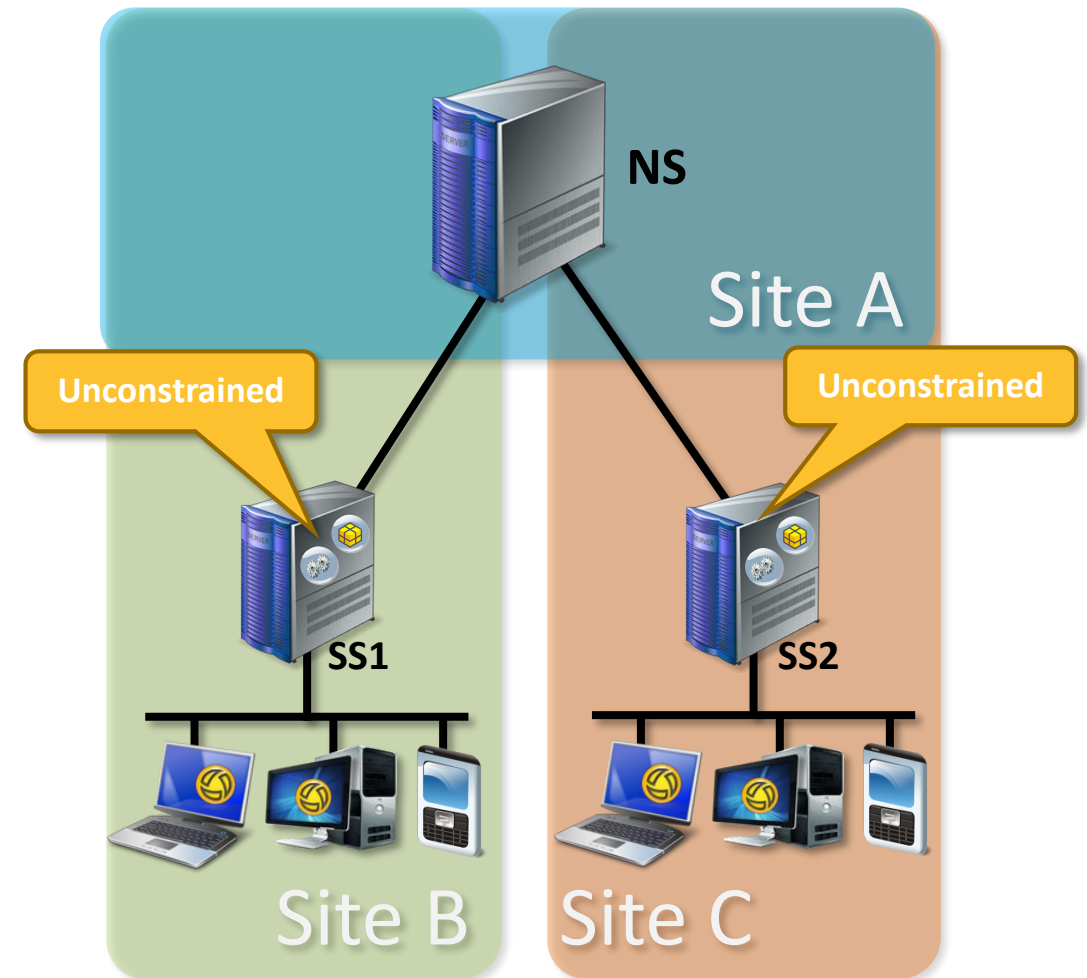
Package Server Implementation

- **Unconstrained Configuration**
 - NS subnet added to Site B and Site C



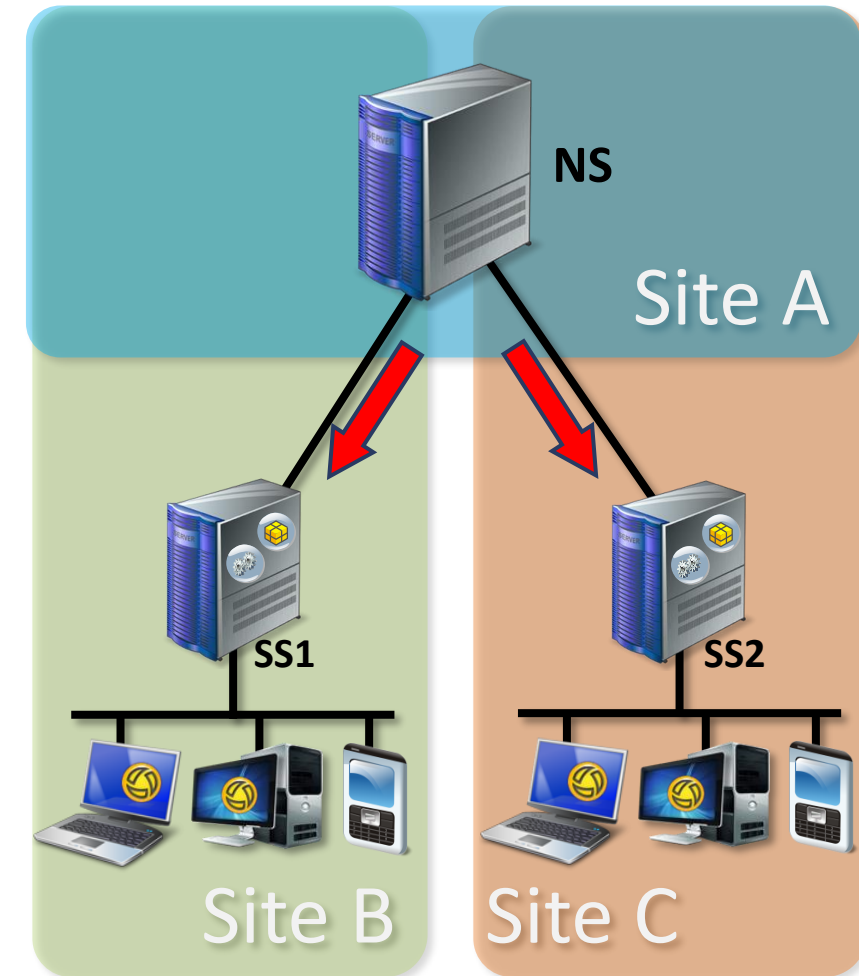
Package Server Implementation

- **Unconstrained Configuration**
 - NS subnet added to Site B and Site C
 - ***Unconstrained*** Site Server on each Site



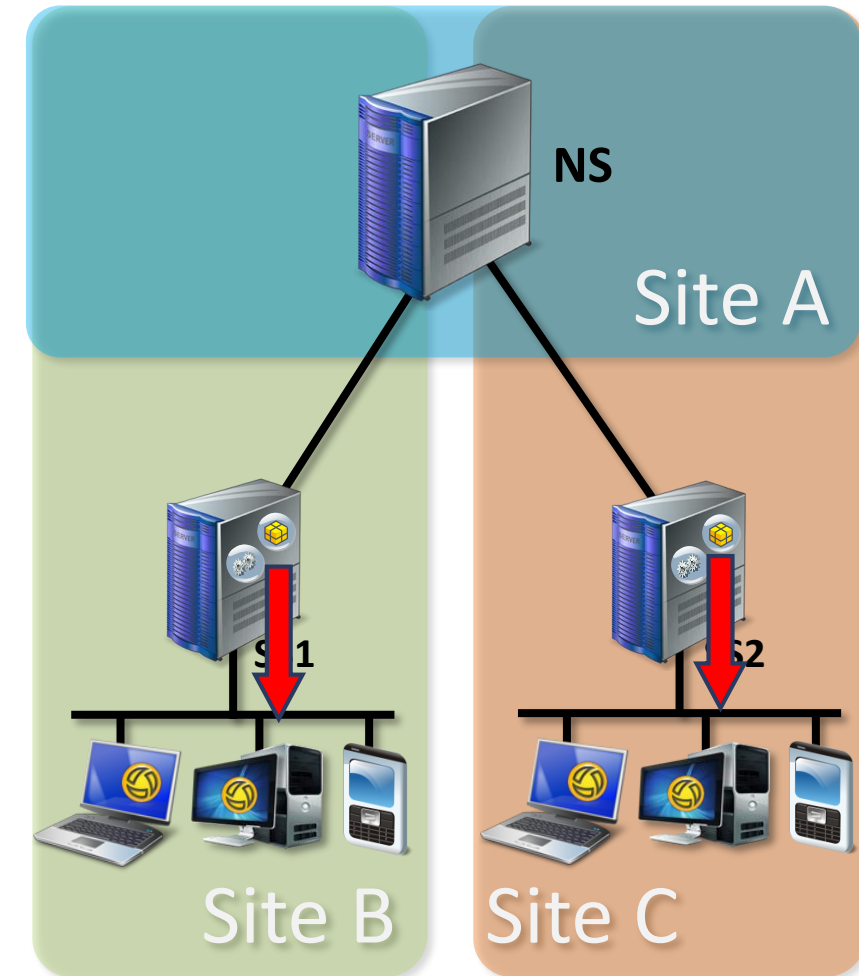
Package Server Implementation

- **Unconstrained Configuration**
 - NS subnet added to Site B and Site C
 - **Unconstrained** Site Server on each Site
 - Provides WAN Bandwidth Savings
 - Packages are Received from NS to SS1, SS2
 - In this case there are 2 connections to the NS



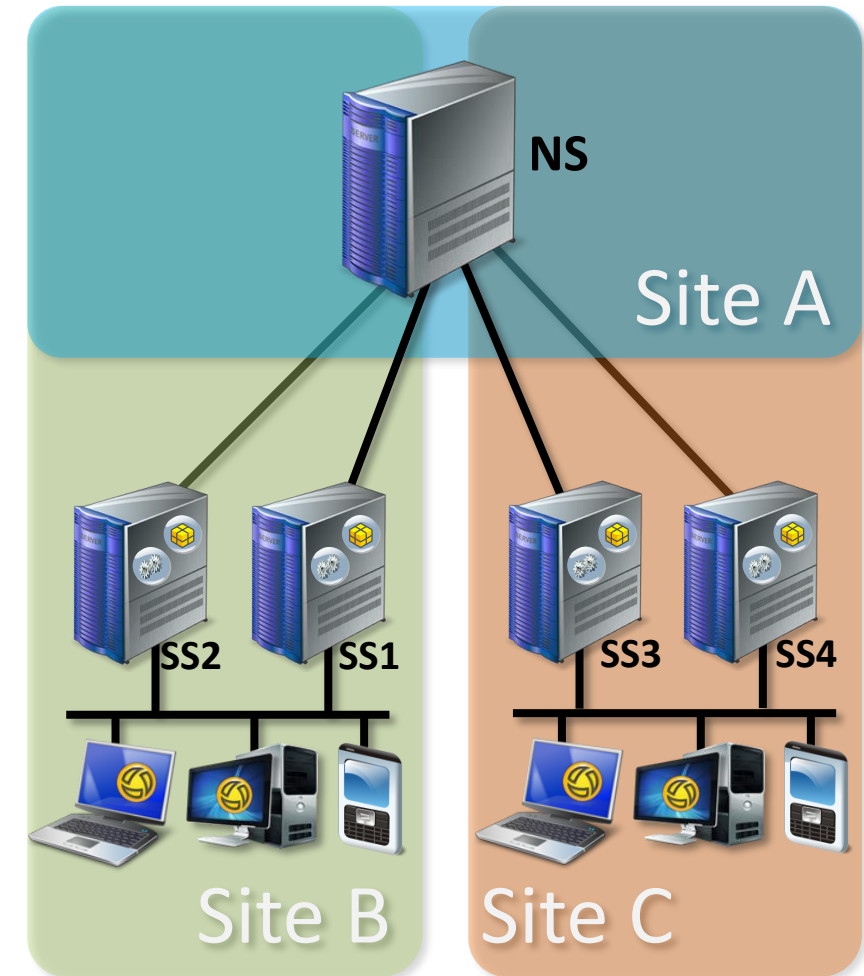
Package Server Implementation

- **Unconstrained Configuration**
 - NS subnet added to Site B and Site C
 - **Unconstrained** Site Server on each Site
 - Provides WAN Bandwidth Savings
 - Packages are Received from NS to SS1, SS2
 - In this case there are 2 connections to the NS
 - Excellent Local File Service
 - Clients will Receive files from their SS



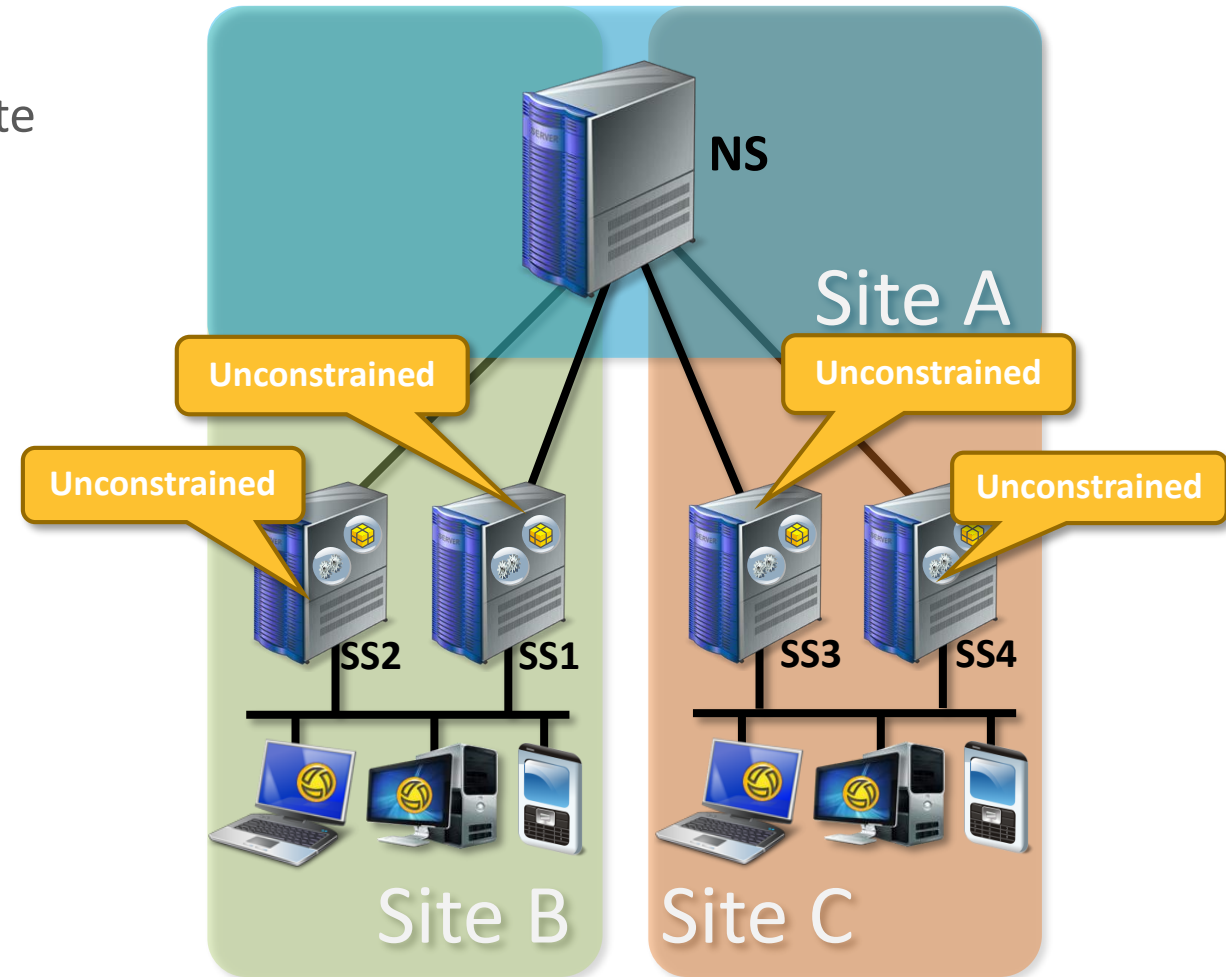
Package Server Implementation

- **Multiple Unconstrained Configuration**
 - NS subnet added to Site B and Site C



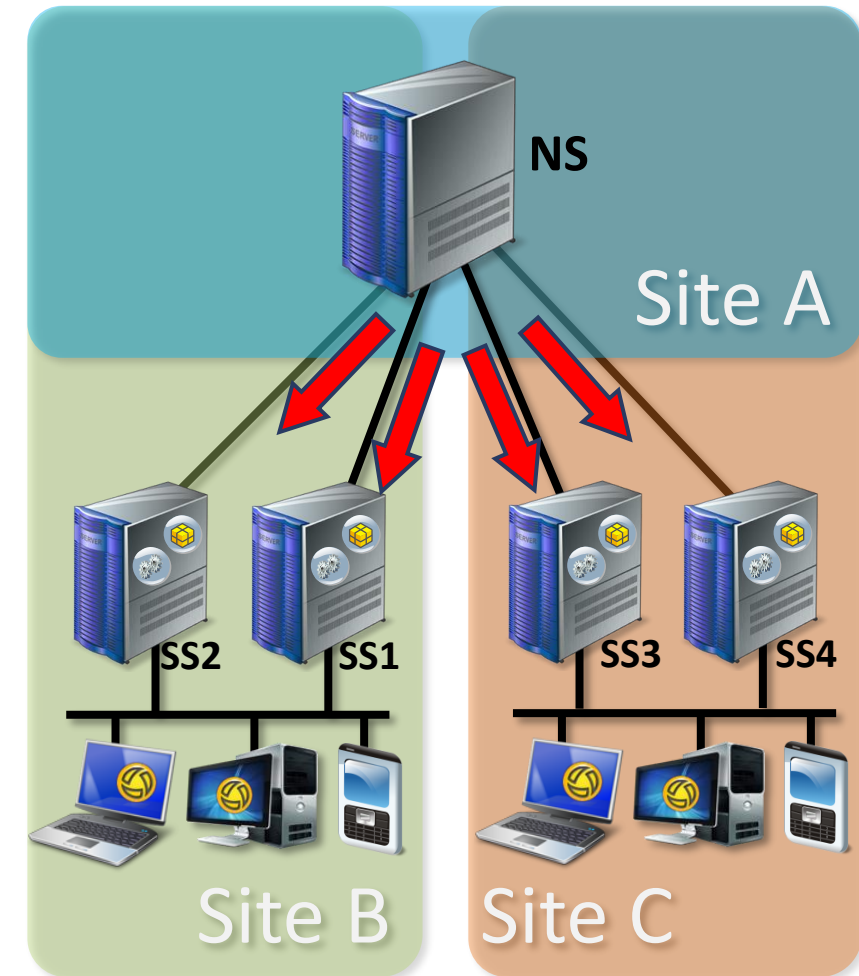
Package Server Implementation

- Multiple Unconstrained Configuration
 - NS subnet added to Site B and Site C
 - Multiple **Unconstrained** Site Servers on each Site



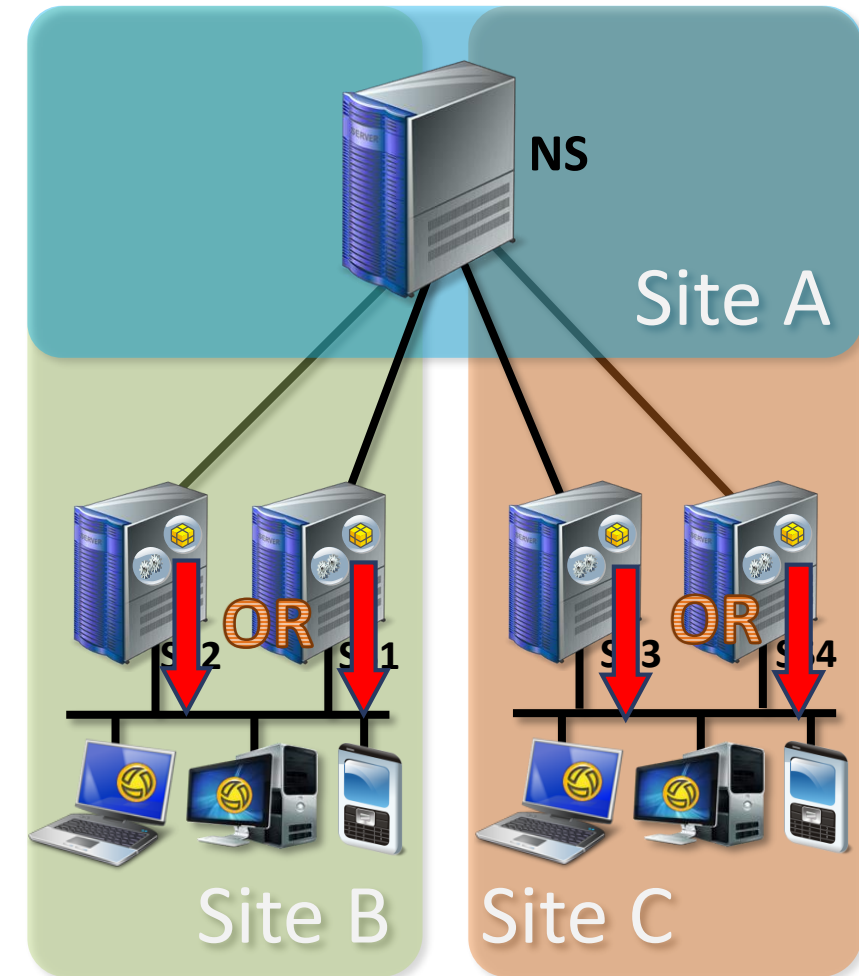
Package Server Implementation

- **Multiple Unconstrained Configuration**
 - NS subnet added to Site B and Site C
 - Multiple **Unconstrained** Site Servers on each Site
 - Provides Some WAN Bandwidth Savings
 - Packages are Received from NS to SS1, SS2, SS3, SS4
 - In this case there are now 4 connections to the NS



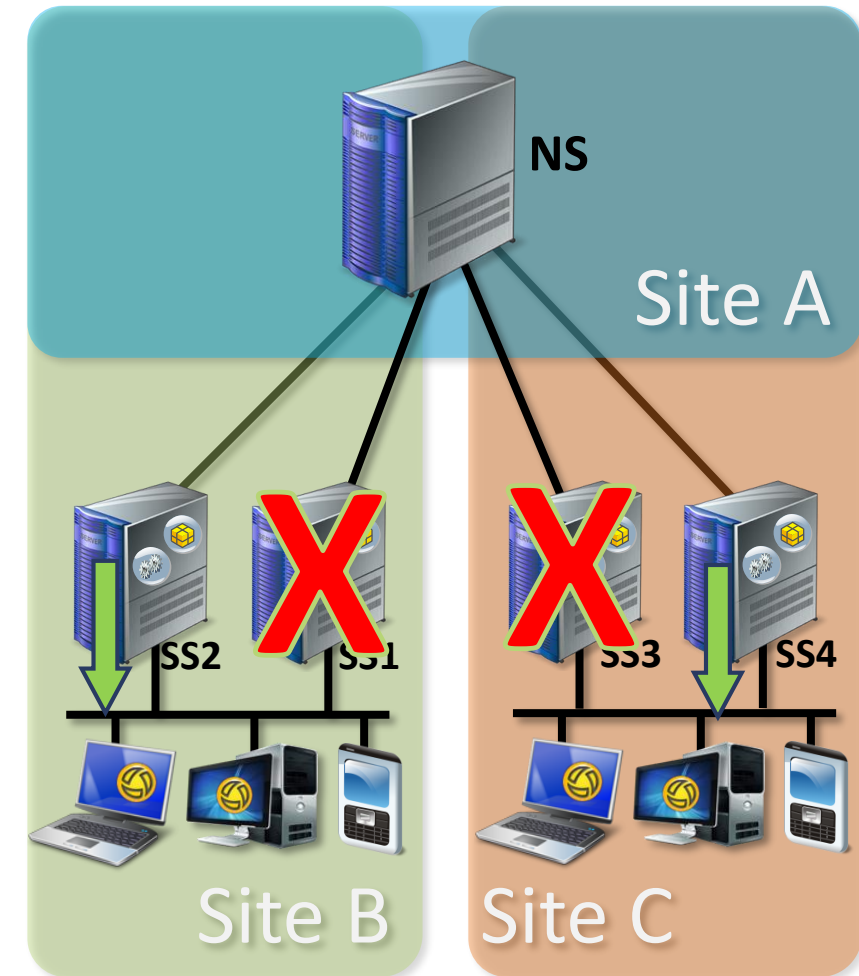
Package Server Implementation

- **Multiple Unconstrained Configuration**
 - NS subnet added to Site B and Site C
 - Multiple **Unconstrained** Site Servers on each Site
 - Provides Some WAN Bandwidth Savings
 - Packages are Received from NS to SS1, SS2, SS3, SS4
 - In this case there are now 4 connections to the NS
- Excellent Local Load Balancing
 - Clients will Receive files from one SS or the other SS
 - Will even switch between them in busy times



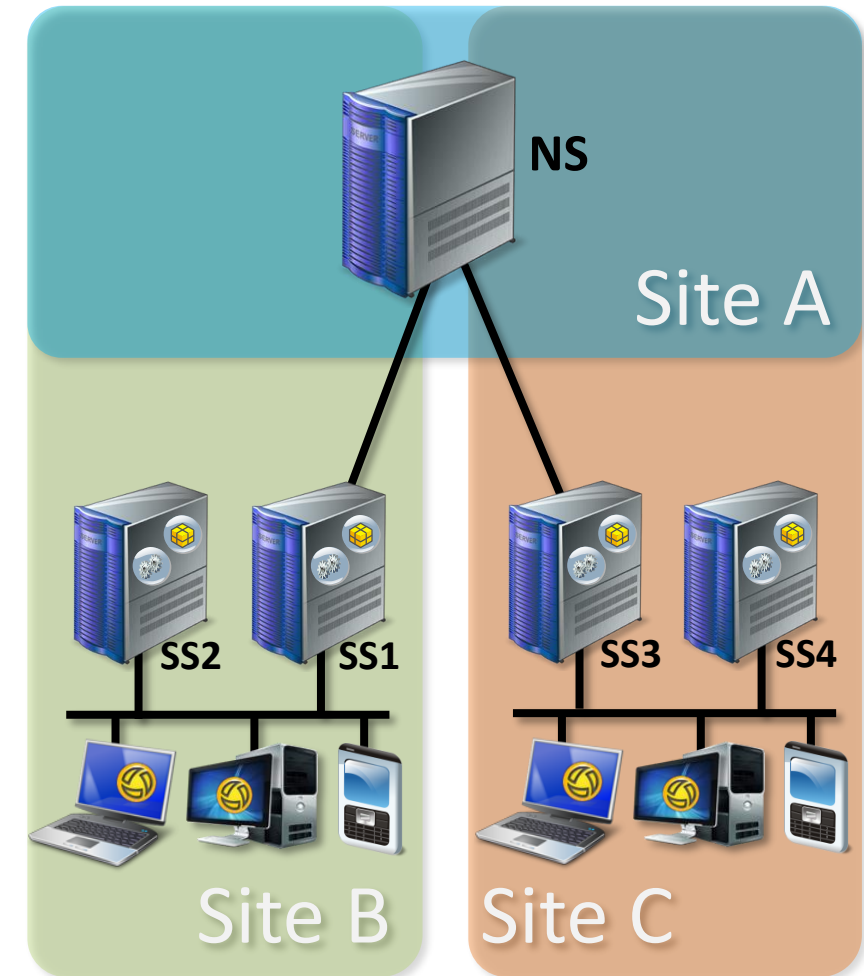
Package Server Implementation

- **Multiple Unconstrained Configuration**
 - NS subnet added to Site B and Site C
 - Multiple **Unconstrained** Site Servers on each Site
 - Provides Some WAN Bandwidth Savings
 - Packages are Received from NS to SS1, SS2, SS3, SS4
 - In this case there are now 4 connections to the NS
 - Excellent Local Load Balancing
 - Clients will Receive files from one SS or the other SS
 - Will even switch between them in busy times
 - Fault Tolerance
 - If a site server goes down, the other will serve the files
 - Will even switch over in the middle of an operation



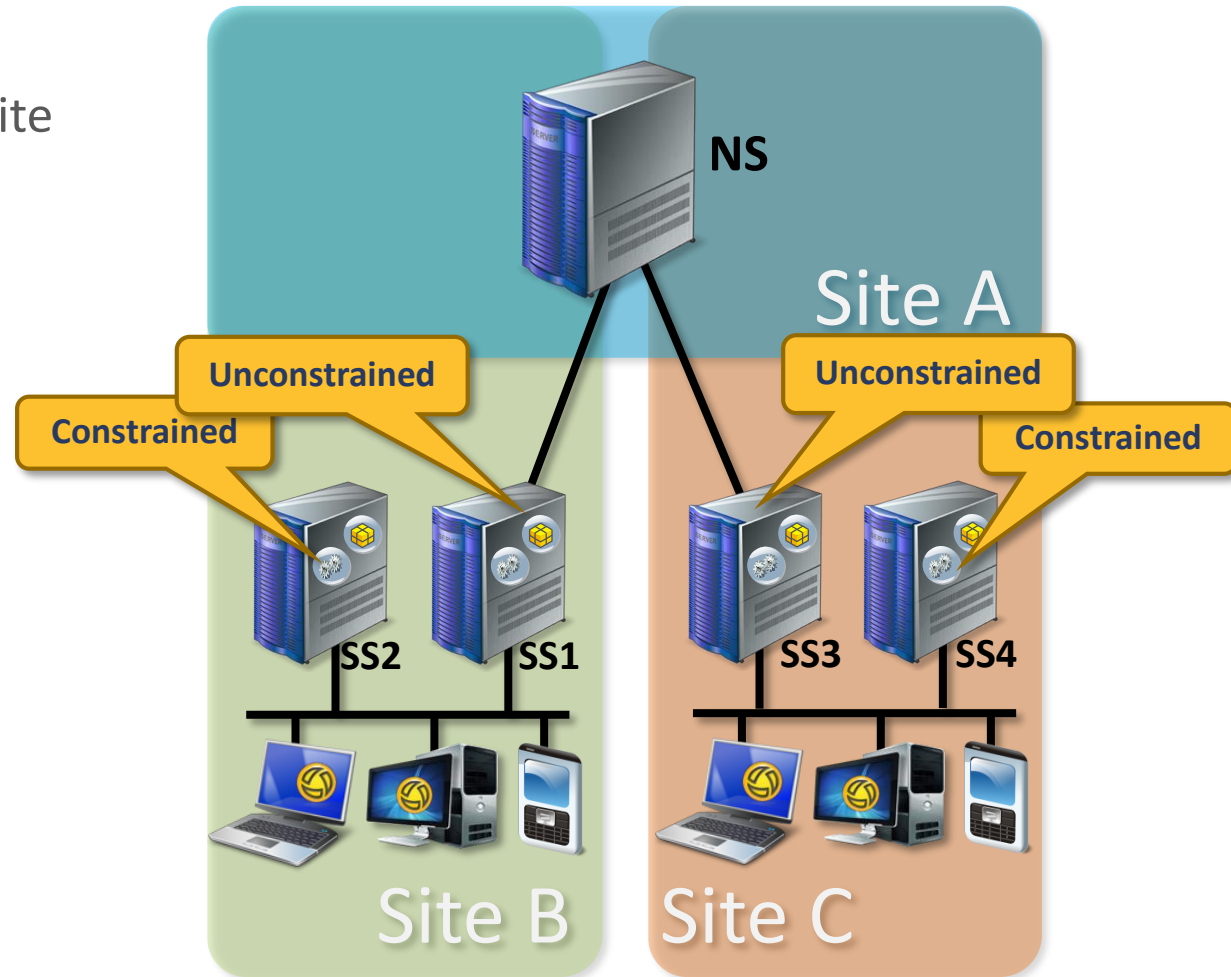
Package Server Implementation

- **Hybrid Configuration**
 - NS subnet added to Site B and Site C



Package Server Implementation

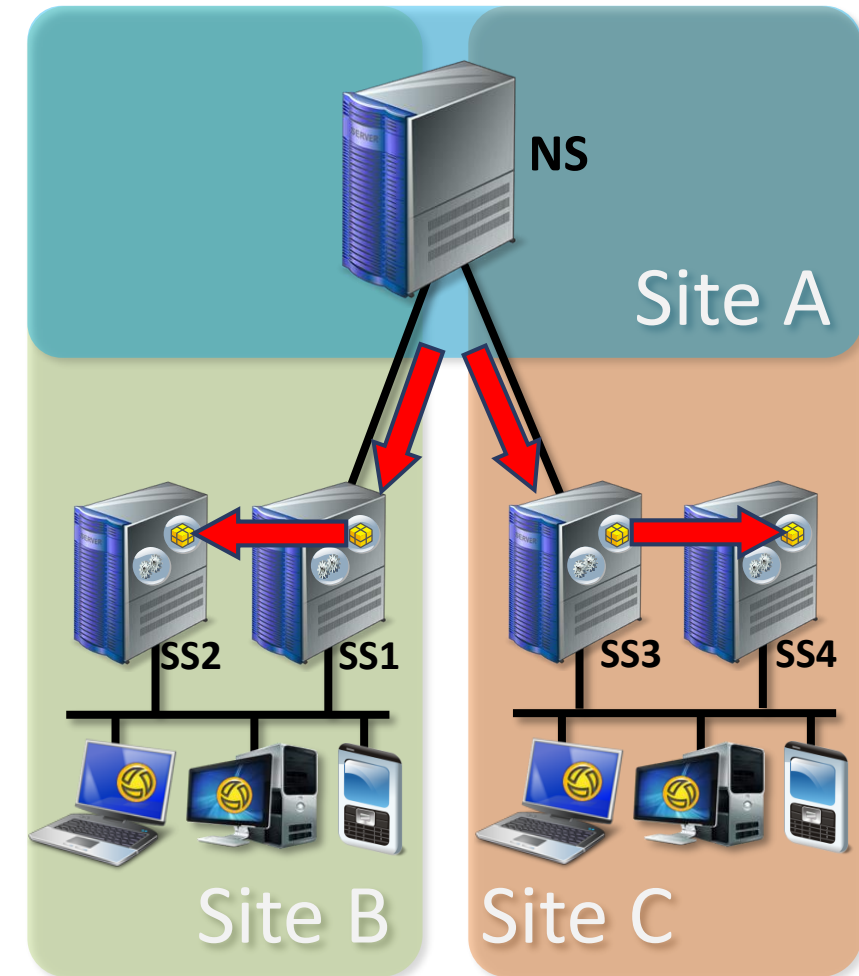
- Hybrid Configuration
 - NS subnet added to Site B and Site C
 - One *Unconstrained* and One *Constrained* per Site



Package Server Implementation

- **Hybrid Configuration**

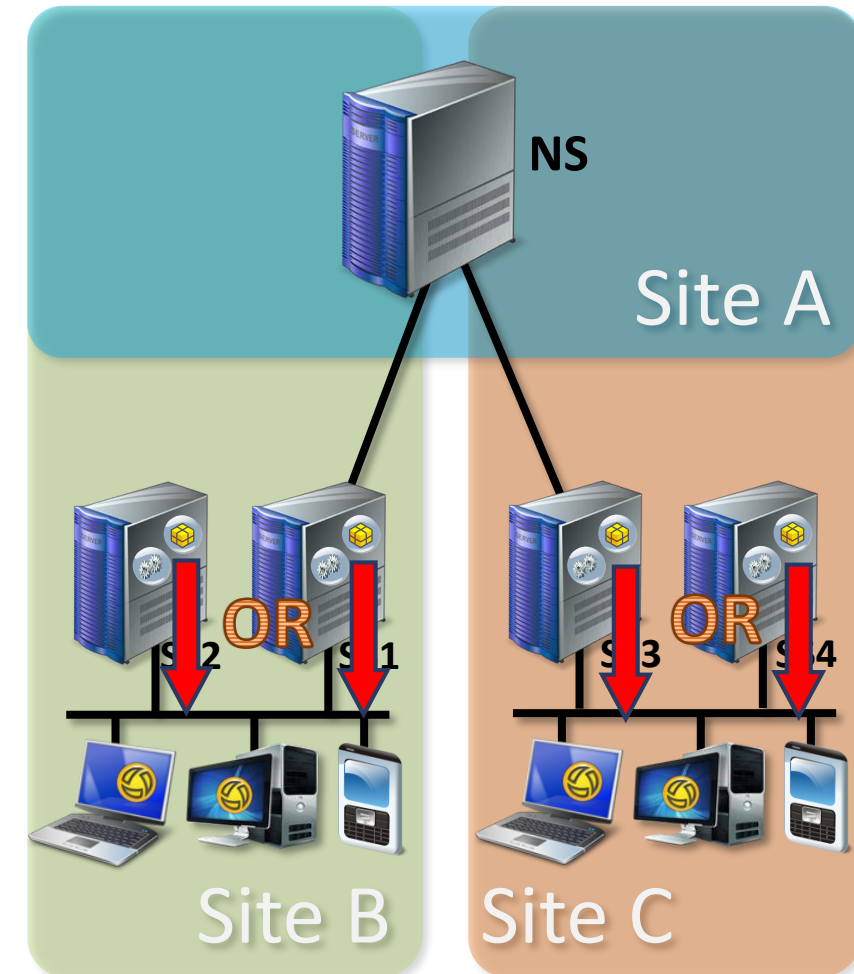
- NS subnet added to Site B and Site C
- One **Unconstrained** and One **Constrained** per Site
- Reduces WAN Bandwidth
 - Packages are Received from NS to SS1, SS3
 - In this case there are only 2 connections to the NS
 - Packages are Received from SS1 to SS2, SS3 to SS4



Package Server Implementation

- **Hybrid Configuration**

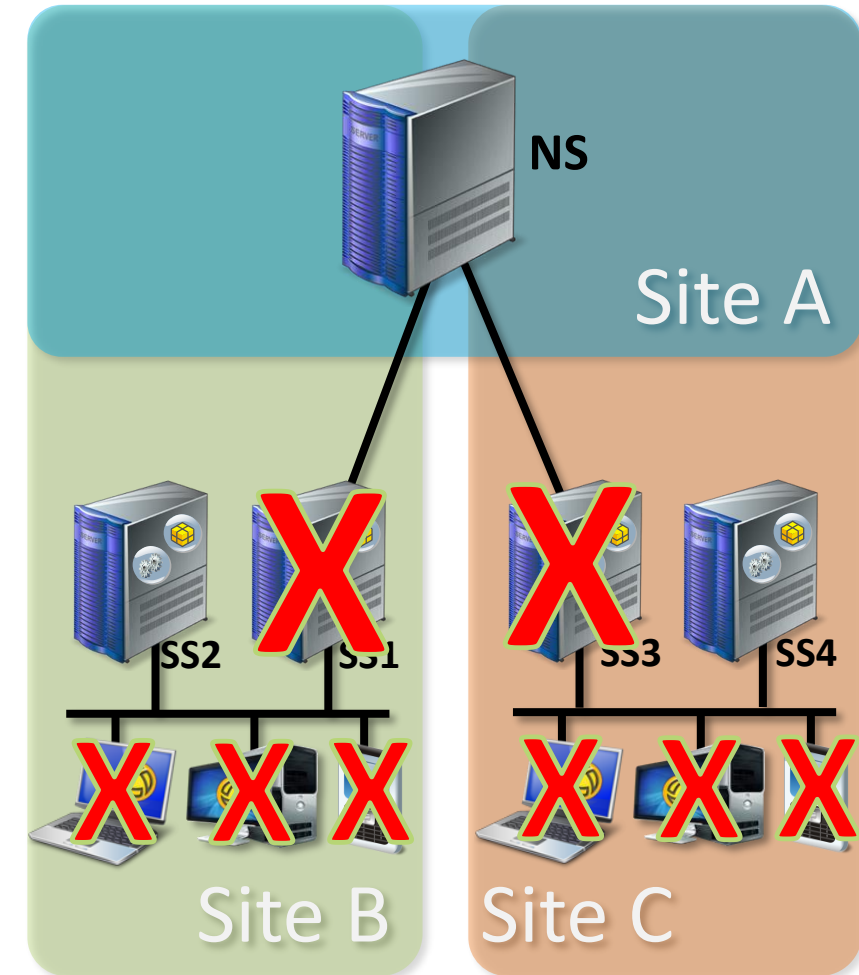
- NS subnet added to Site B and Site C
- One **Unconstrained** and One **Constrained** per Site
- Reduces WAN Bandwidth
 - Packages are Received from NS to SS1, SS3
 - In this case there are only 2 connections to the NS
 - Packages are Received from SS1 to SS2, SS3 to SS4
- Excellent Local Load Balancing
 - Clients will Receive files from one SS or the other SS



Package Server Implementation

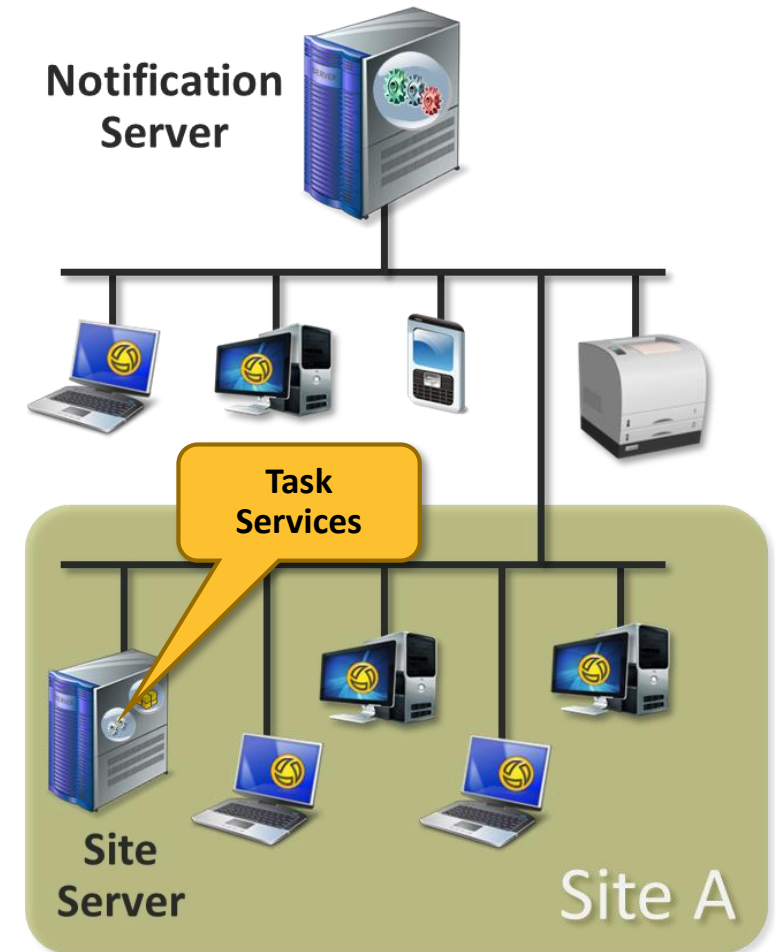
- **Hybrid Configuration**

- NS subnet added to Site B and Site C
- One **Unconstrained** and One **Constrained** per Site
- Reduces WAN Bandwidth
 - Packages are Received from NS to SS1, SS3
 - In this case there are only 2 connections to the NS
 - Packages are Received from SS1 to SS2, SS3 to SS4
- Excellent Local Load Balancing
 - Clients will Receive files from one SS or the other SS
- No Fault Tolerance on Sites
 - If Unconstrained Site Server goes down
 - **NO** New/Updated files served
 - If Remaining PS set to Constrained the Notification Server codebase will **not** be returned



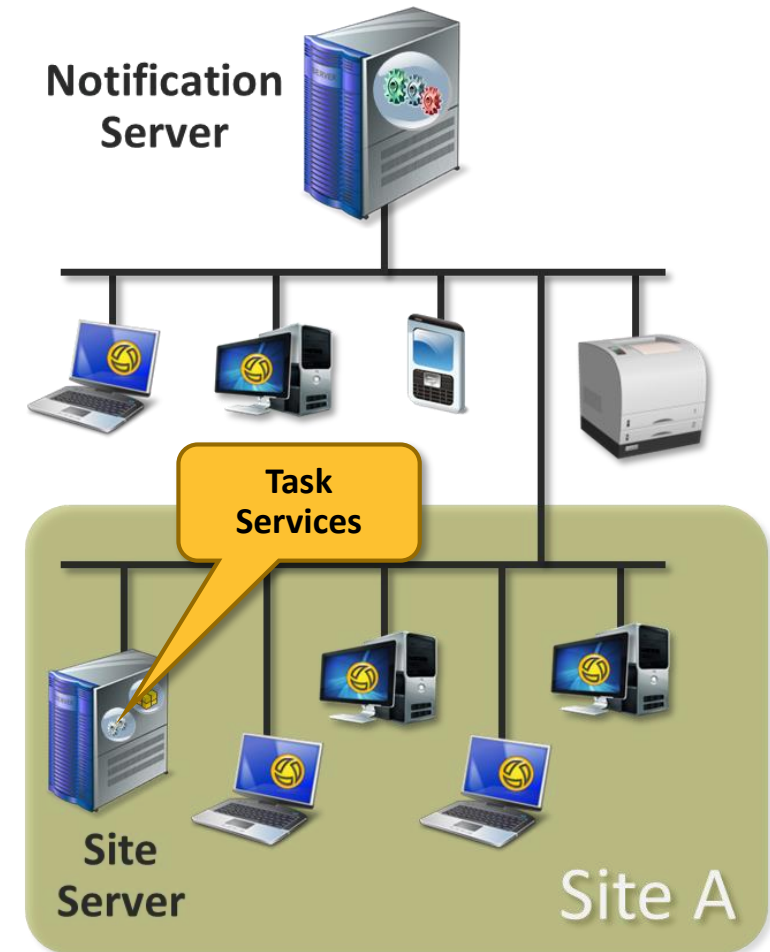
Task Services

- Task communications are unique from policy communications.
 - Managed computers start policy communications
 - The server starts task communications.



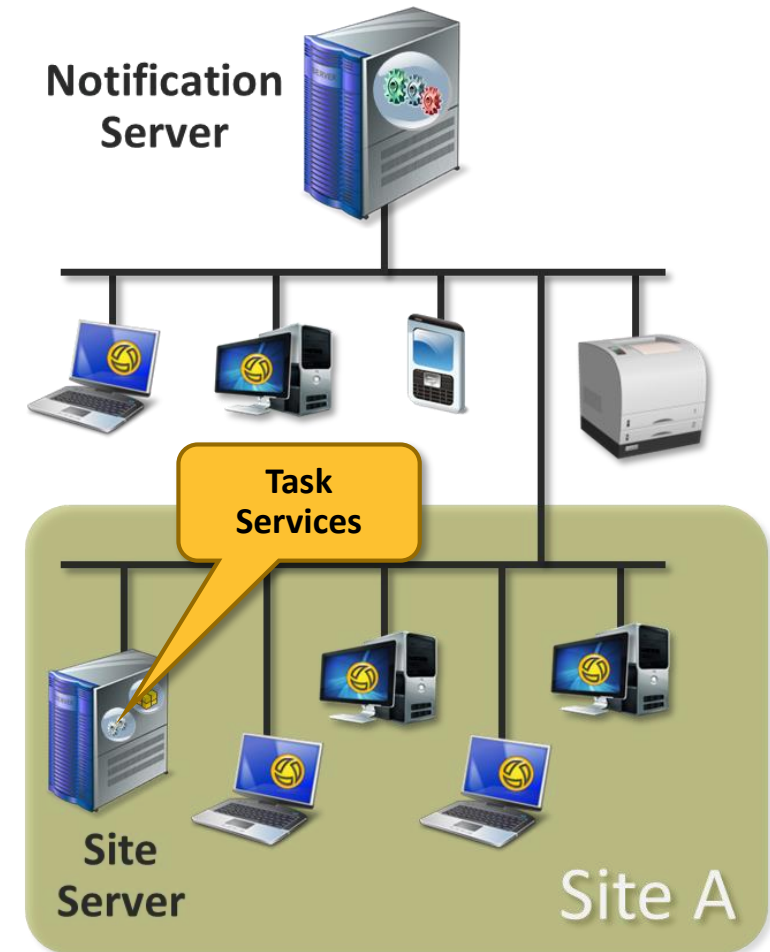
Task Services

- **Task communications are unique from policy communications.**
 - Managed computers start policy communications
 - The server starts task communications.
- **You can do the following with the task service:**
 - Execute multiple tasks in a defined sequence called a Job.
 - Provide logic to handle task errors or other return codes.
 - Deliver command-line and script capabilities to endpoints
 - Provide out-of-the-box power management.
 - Execute client-side and server-side tasks.
 - Reuse tasks in multiple Jobs.



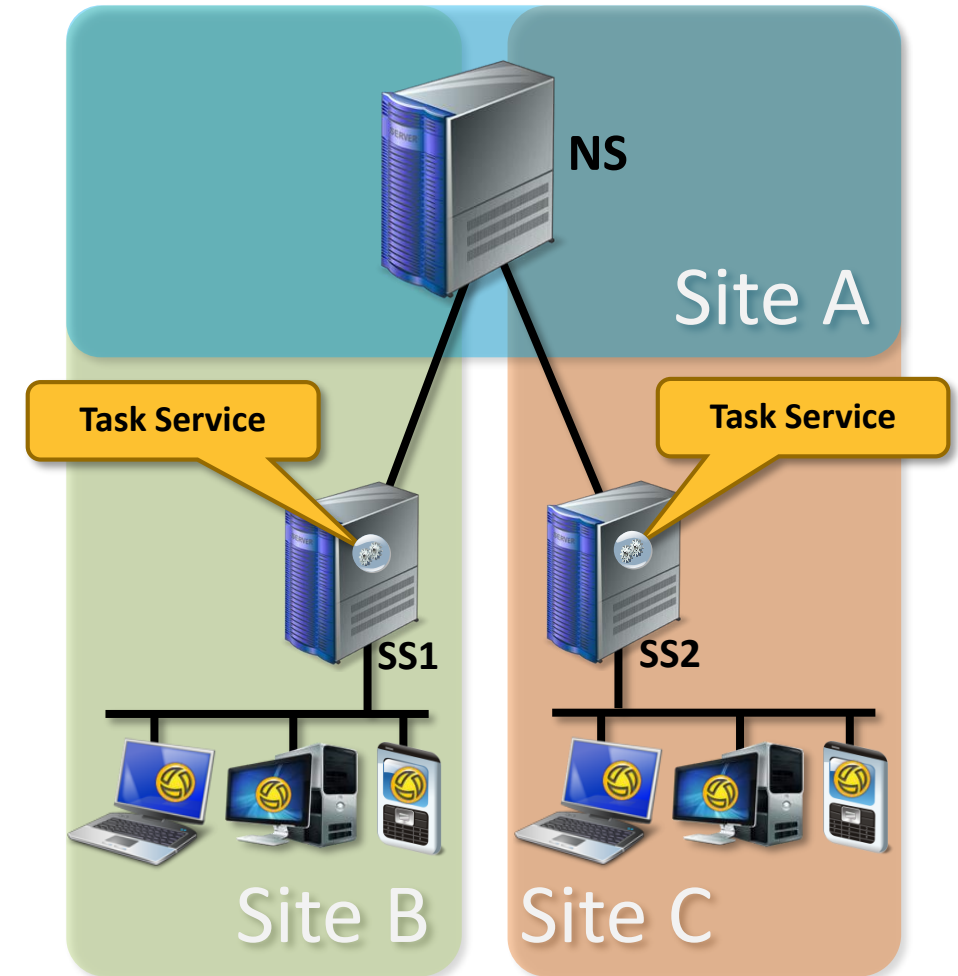
Task Services

- **Task communications are unique from policy communications.**
 - Managed computers start policy communications
 - The server starts task communications.
- **You can do the following with the task service:**
 - Execute multiple tasks in a defined sequence called a Job.
 - Provide logic to handle task errors or other return codes.
 - Deliver command-line and script capabilities to endpoints
 - Provide out-of-the-box power management.
 - Execute client-side and server-side tasks.
 - Reuse tasks in multiple Jobs.
- **At least one task server per Notification Server.**
 - Places a performance demand on the NS due to tickle status.
 - Negatively influences SQL data loading and user interface responsiveness.



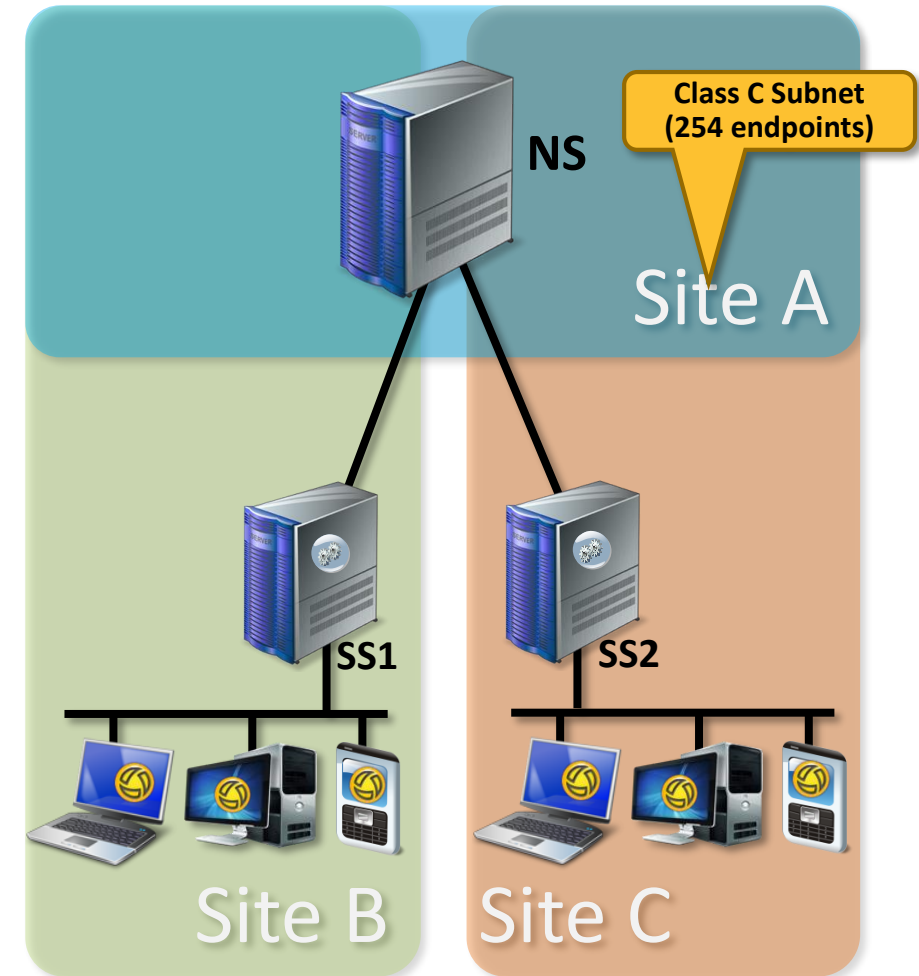
Task Services Implementation

- Reduce traffic to the NS using Task Services



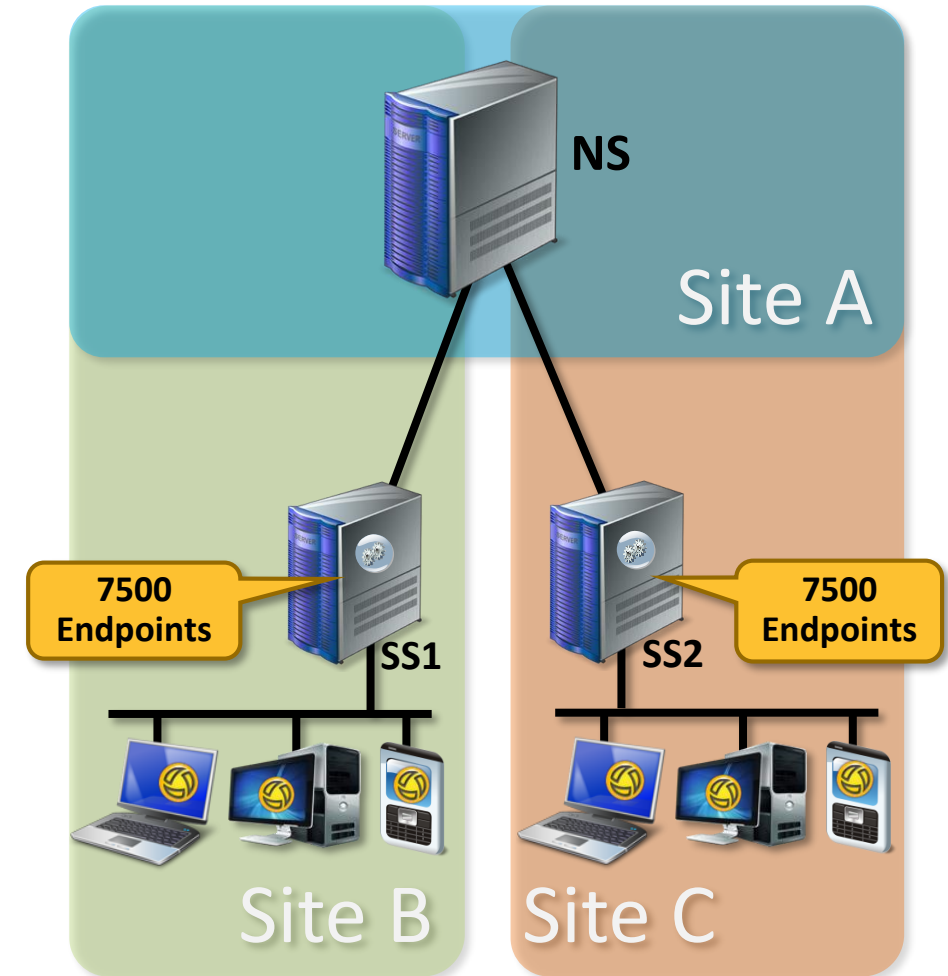
Task Services Implementation

- Reduce traffic to the NS using Task Services
- Create a site for the NS that is a Class C subnet
 - NS will be limited to registering no more than 254 clients



Task Services Implementation

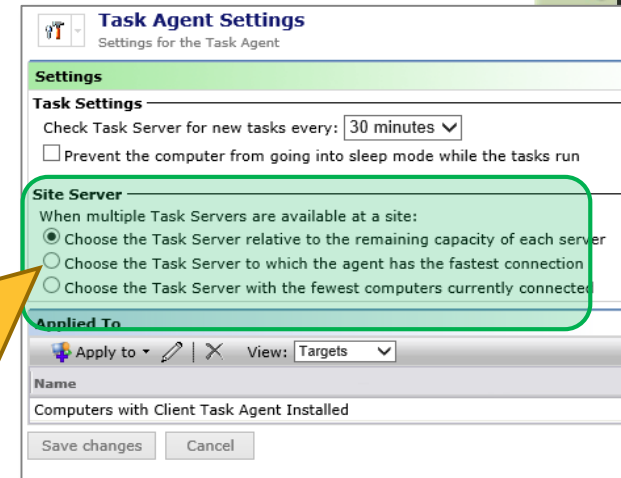
- Reduce traffic to the NS using Task Services
- Create a site for the NS that is a Class C subnet
 - NS will be limited to registering no more than 254 clients
- Create sites for each of your Task Servers.
 - Task Server can support 7500 clients if it is scaled appropriately
 - Requirements are very modest (e.g.. Desktop or Server OS, Low Resources)



Task Services Implementation

- Can assign multiple Task Servers to each site
 - Not managed like Package Servers with Constrained or unconstrained servers.
 - For load balancing utilize the **Site Server** configuration settings in the **Task Agent Settings**

Load Balancing



The image shows a screenshot of the 'Task Agent Settings' dialog box. The 'Site Server' section is highlighted with a green border and contains three radio button options. A yellow arrow points from the 'Load Balancing' text to the first option. The 'Applied To' section shows a list of targets.

Task Agent Settings
Settings for the Task Agent

Settings

Task Settings

Check Task Server for new tasks every: 30 minutes ▼

☐ Prevent the computer from going into sleep mode while the tasks run

Site Server

When multiple Task Servers are available at a site:

- ☒ Choose the Task Server relative to the remaining capacity of each server
- ☐ Choose the Task Server to which the agent has the fastest connection
- ☐ Choose the Task Server with the fewest computers currently connected

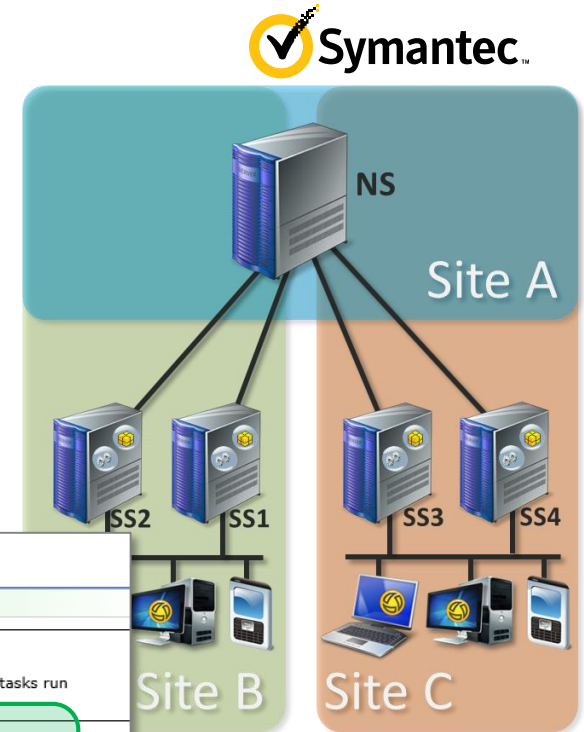
Applied To

Apply to: [icon] [icon] [icon] View: Targets ▼

Name

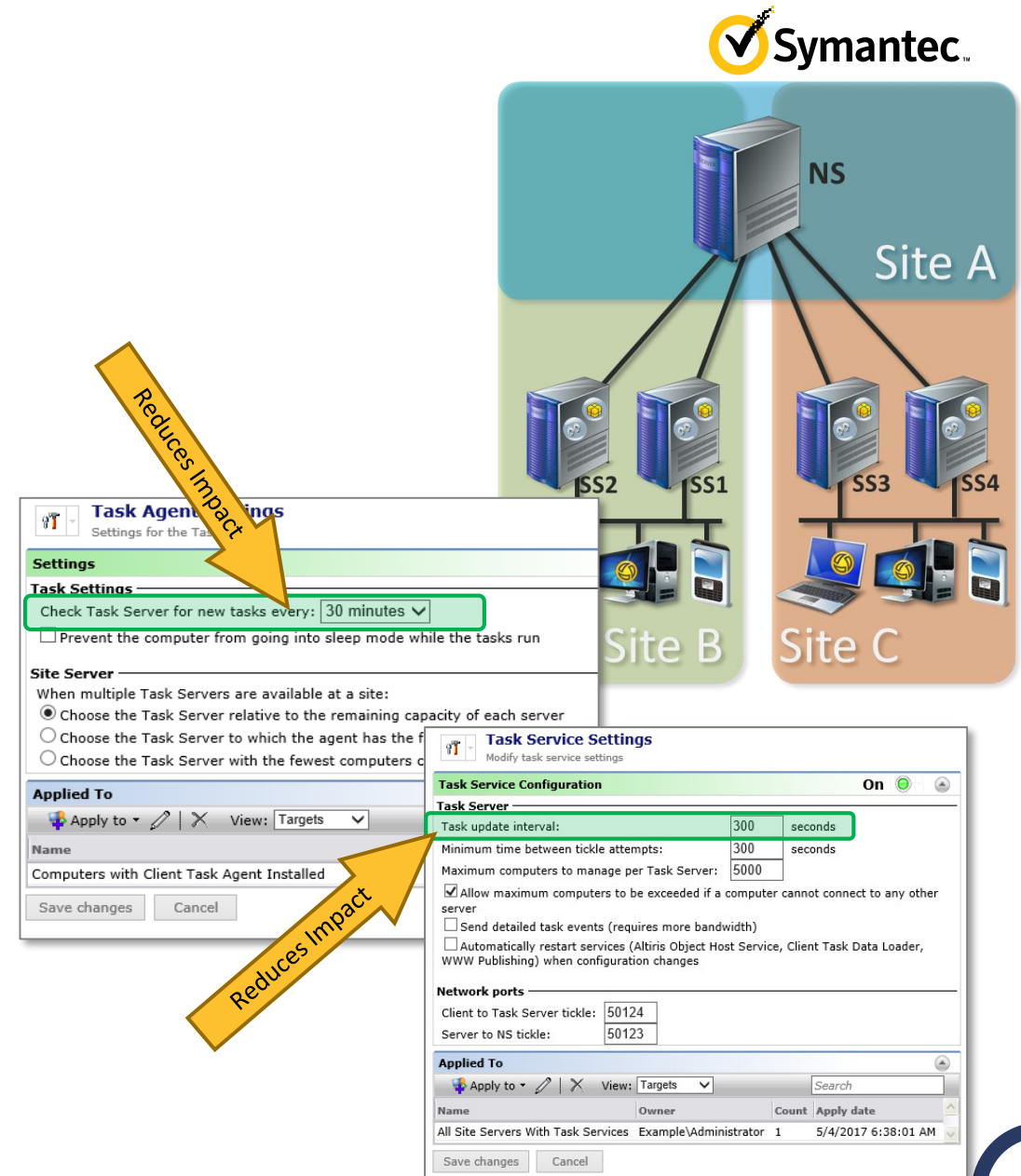
Computers with Client Task Agent Installed

Save changes Cancel



Task Services Implementation

- Can assign multiple Task Servers to each site
 - Not managed like Package Servers with Constrained or unconstrained servers.
 - For load balancing utilize the **Site Server** configuration settings in the **Task Agent Settings**
- In larger environments:
 - **Task Agent settings:** Increase the Client Task Interval to > 30 minutes
 - **Task Service Settings:** Increase the Task Update interval to > 5 minutes



Task Services Implementation



- **DO include multiple subnets and include the NS subnet**
 - They might pick up clients from the NS's subnet, but the NS will not pick up clients from the others.
 - As long as bandwidth is good from the clients to the Site Servers

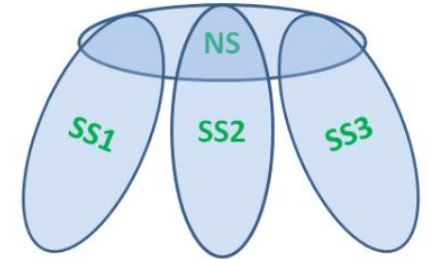


Figure 1

Task Services Implementation



- **DO include multiple subnets and include the NS subnet**
 - They might pick up clients from the NS's subnet, but the NS will not pick up clients from the others.
 - As long as bandwidth is good from the clients to the Site Servers
- **DO Place Task Servers closer to your remote clients.**
 - Used by companies with larger remote environments
 - Each major office may have their own data-centers

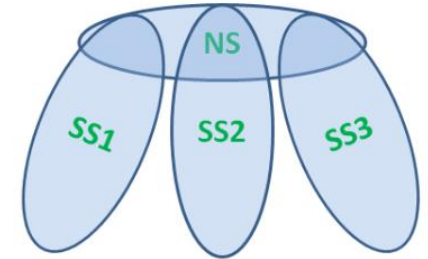


Figure 1

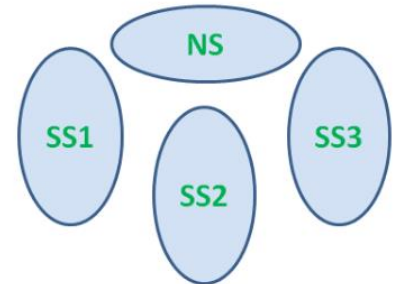


Figure 2

Task Services Implementation

- **DO include multiple subnets and include the NS subnet**
 - They might pick up clients from the NS's subnet, but the NS will not pick up clients from the others.
 - As long as bandwidth is good from the clients to the Site Servers
- **DO Place Task Servers closer to your remote clients.**
 - Used by companies with larger remote environments
 - Each major office may have their own data-centers
- **Don't put Task Servers in every location with a Package Server.**
 - This scenario is no longer demanded by Deployment Solution versions 7.6+
 - Due to constraints in communication between the Task Servers and the NS, this is not recommended.

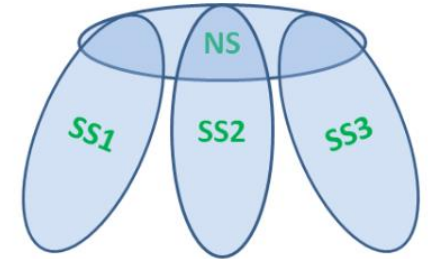


Figure 1

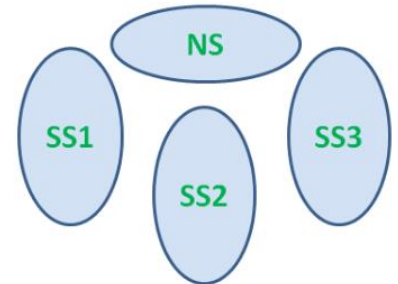


Figure 2

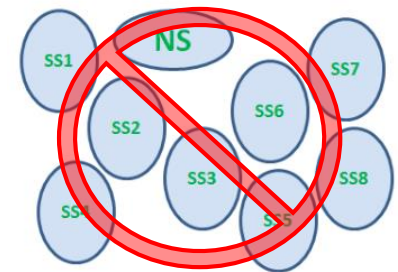
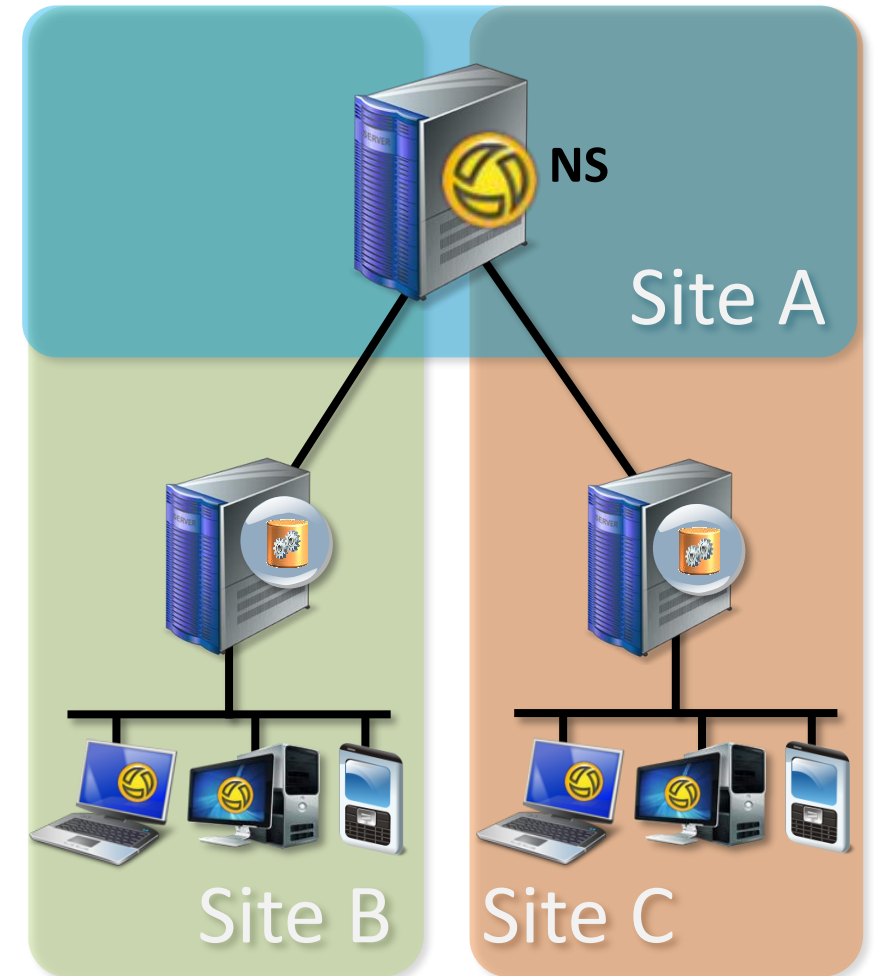


Figure 3

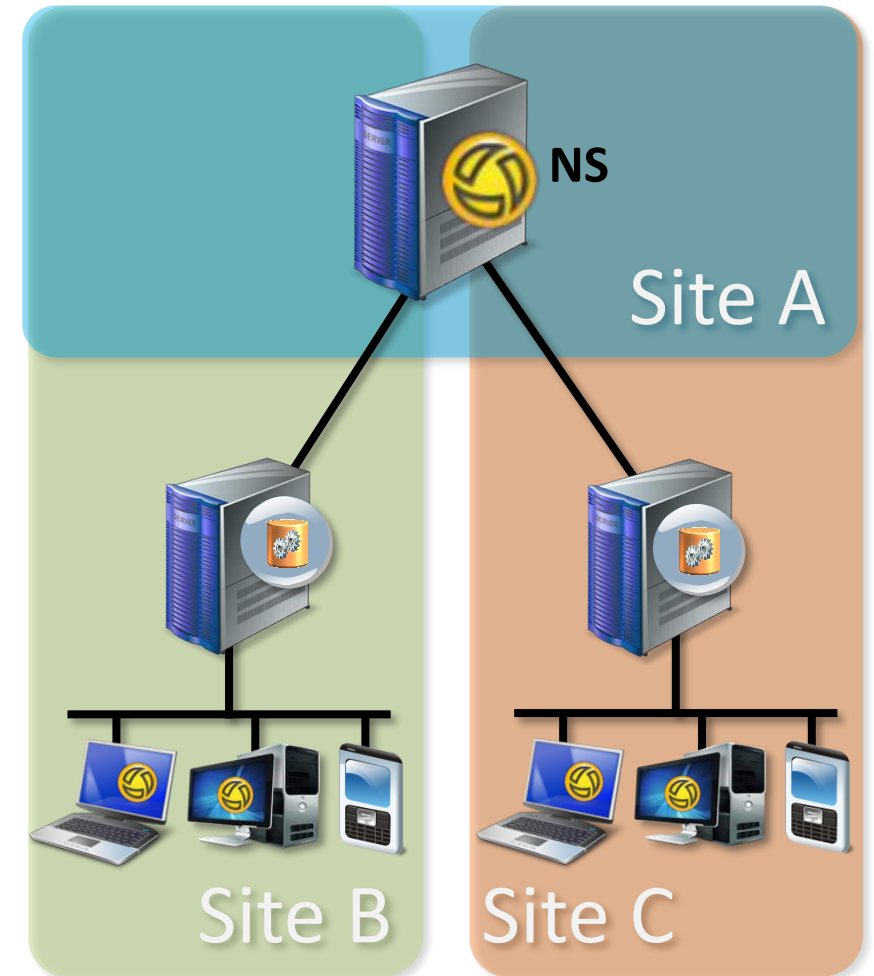
Network Boot Services

- Provides PXE Boot services and boot packages for network segments.
 - Restoring a standard image for support or for rolling out new computers during initial provisioning.



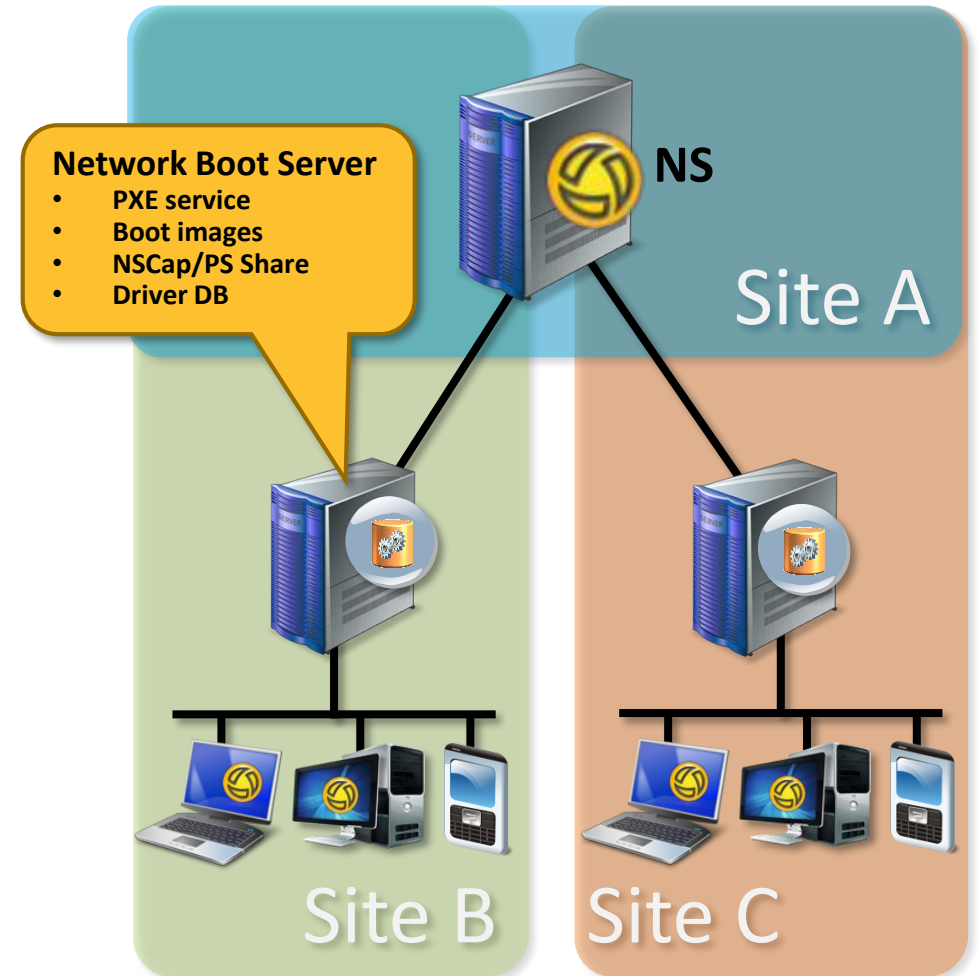
Network Boot Services

- Provides PXE Boot services and boot packages for network segments.
 - Restoring a standard image for support or for rolling out new computers during initial provisioning.
- Typically, PXE protocol is controlled on a network.
 - May be limited to work within a subnet or other defined range based on IP helpers.
 - If many systems must be reimaged simultaneously:
 - Place NBS within each network subnet and add more in a large subnet.
 - In addition to providing PXE services, a network boot server is similar to a package server in that it hosts packages called boot images.



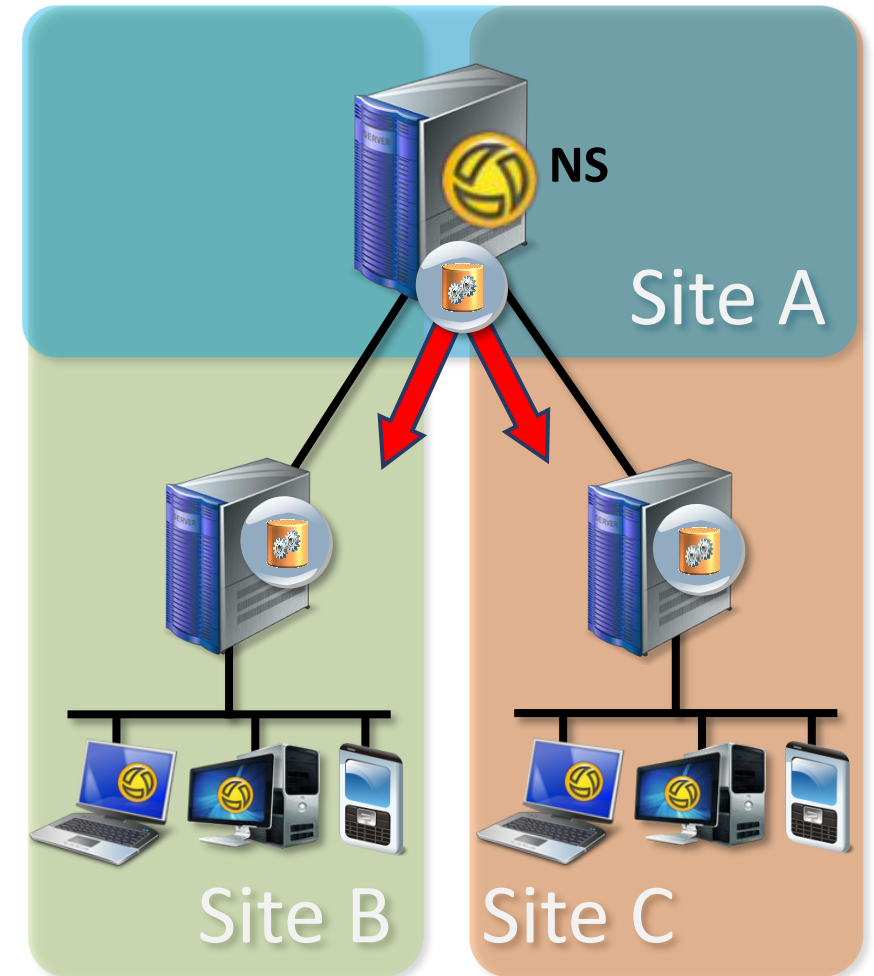
Network Boot Services

- Provides PXE Boot services and boot packages for network segments.
 - Restoring a standard image for support or for rolling out new computers during initial provisioning.
- Typically, PXE protocol is controlled on a network.
 - May be limited to work within a subnet or other defined range based on IP helpers.
 - If many systems must be reimaged simultaneously:
 - Place NBS within each network subnet and add more in a large subnet.
 - In addition to providing PXE services, a network boot server is similar to a package server in that it hosts packages called boot images.



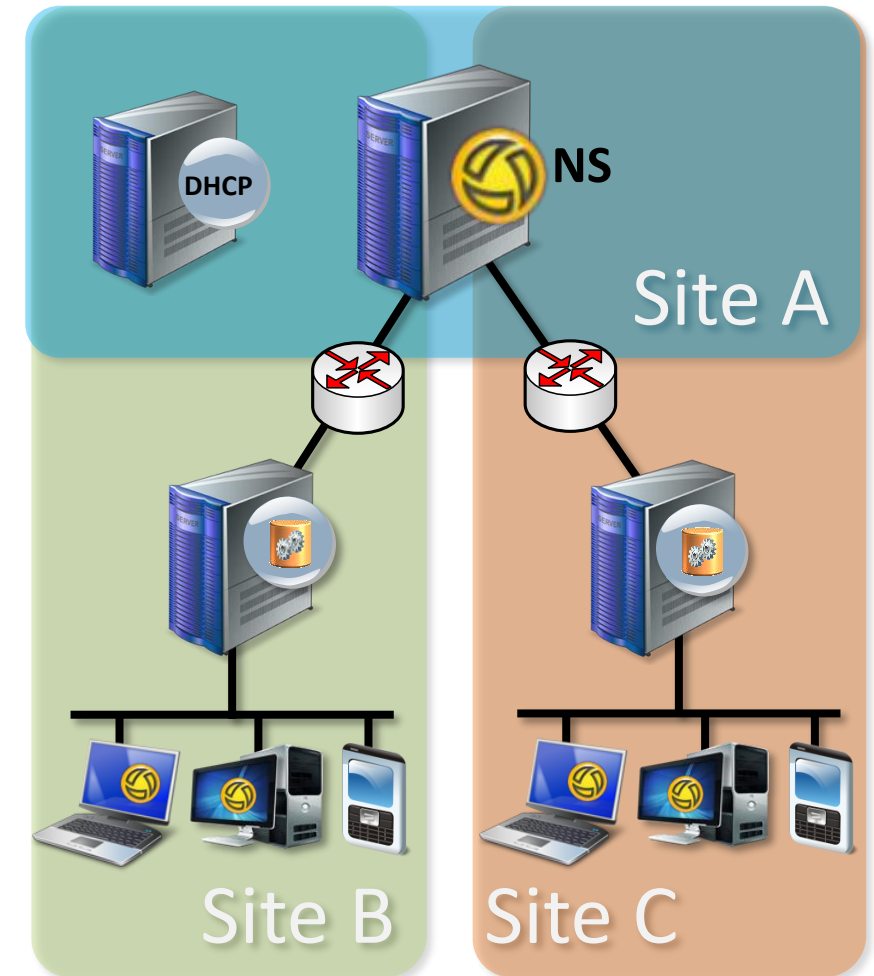
Network Boot Services

- Provides PXE Boot services and boot packages for network segments.
 - Restoring a standard image for support or for rolling out new computers during initial provisioning.
- Typically, PXE protocol is controlled on a network.
 - May be limited to work within a subnet or other defined range based on IP helpers.
 - If many systems must be reimaged simultaneously:
 - Place NBS within each network subnet and add more in a large subnet.
 - In addition to providing PXE services, a network boot server is similar to a package server in that it hosts packages called boot images.
- When new settings are applied they are delivered with a policy to other NBS and an updated boot image is compiled locally



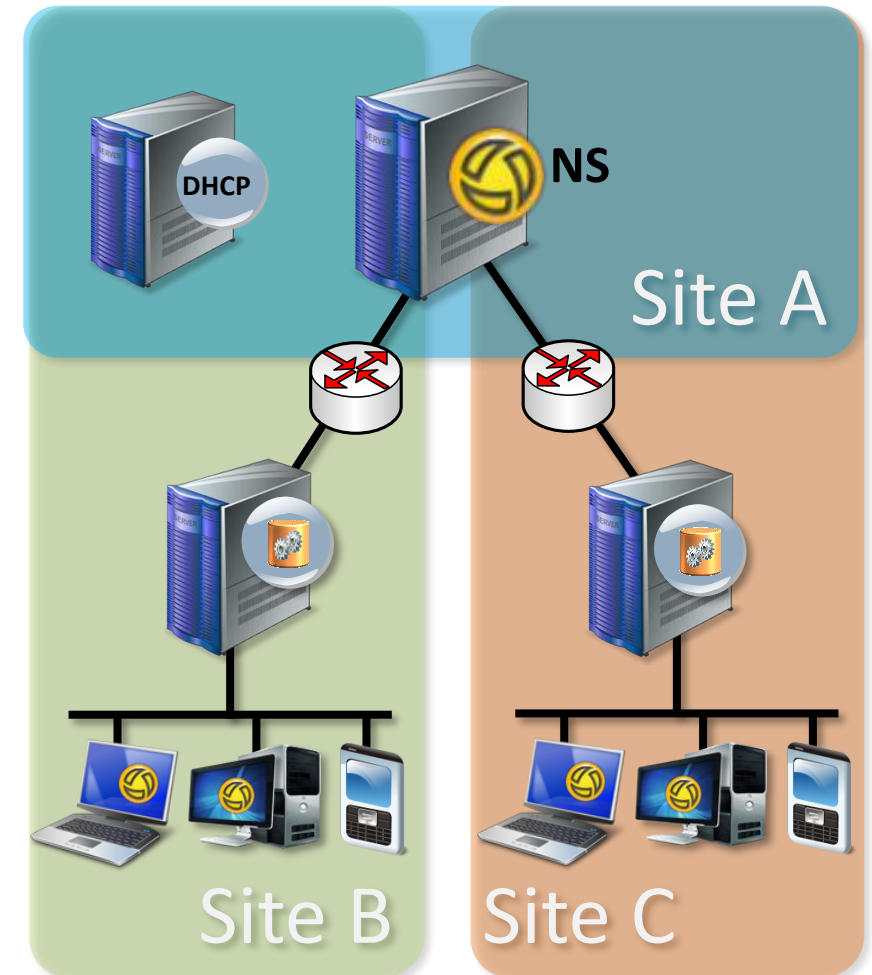
Network Boot Services Implementation

- Each subnet must have access to a NBS Server
 - However, routers normally block PXE broadcast packets.



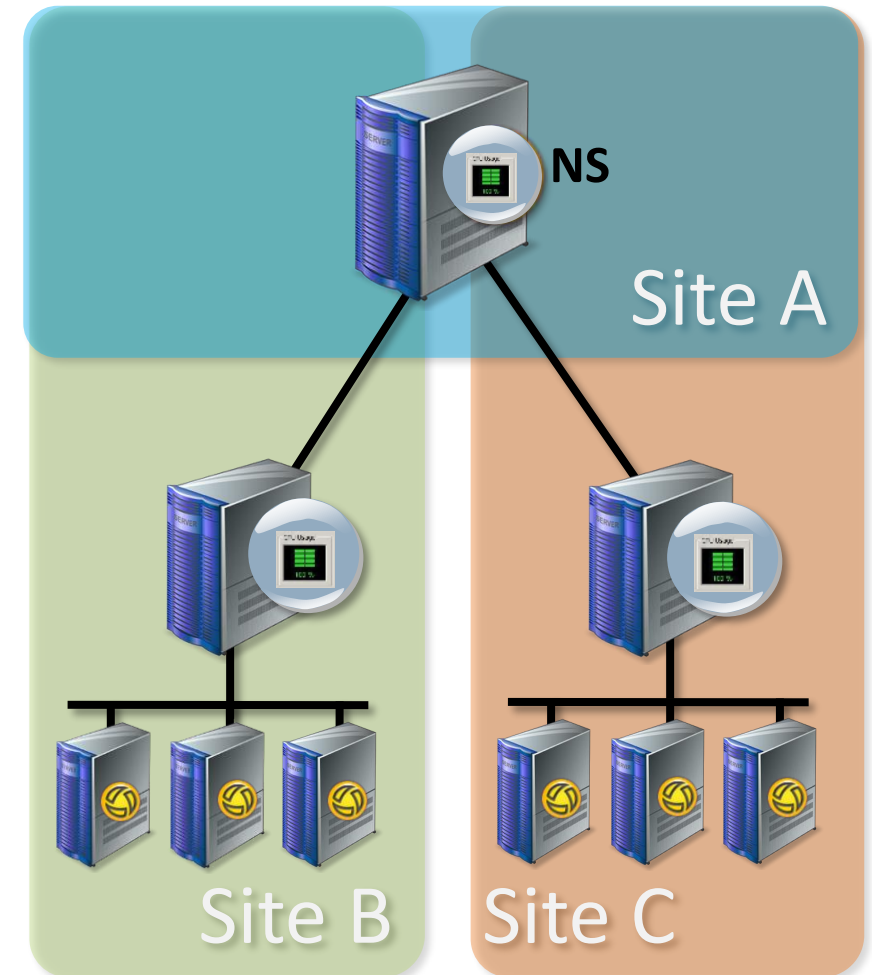
Network Boot Services Implementation

- Each subnet must have access to a NBS Server
 - However, routers normally block PXE broadcast packets.
- Can use the following methods to provide each subnet with access:
 - **Use "DHCP forced mode"**
 - A DHCP setting that forwards client PXE requests to the closest network boot server.
 - **Use "IP Helpers"**
 - A setting you can configure at each router that lets you forward PXE requests across subnets.
 - **Install a NBS on each subnet.**
 - This method is **not** recommended because it creates unnecessary overhead.



Monitor Services

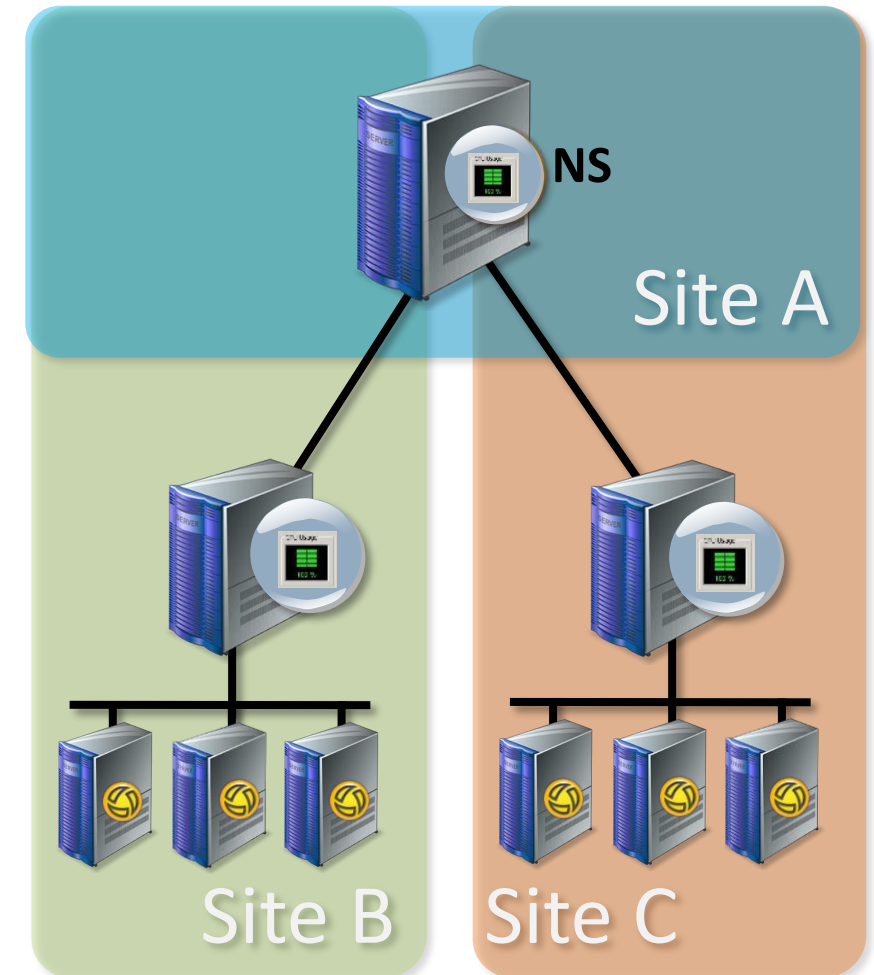
- Lets you perform agentless monitoring remotely
- Default Install on the Notification Server
- Distribute the monitoring load to other site servers
 - Reduces the load on Notification Server.
- Can be removed from the NS to further reduce load
- Integrated with the site server infrastructure.
 - Can specify the resources that each site server monitors.



Monitor Services Implementation



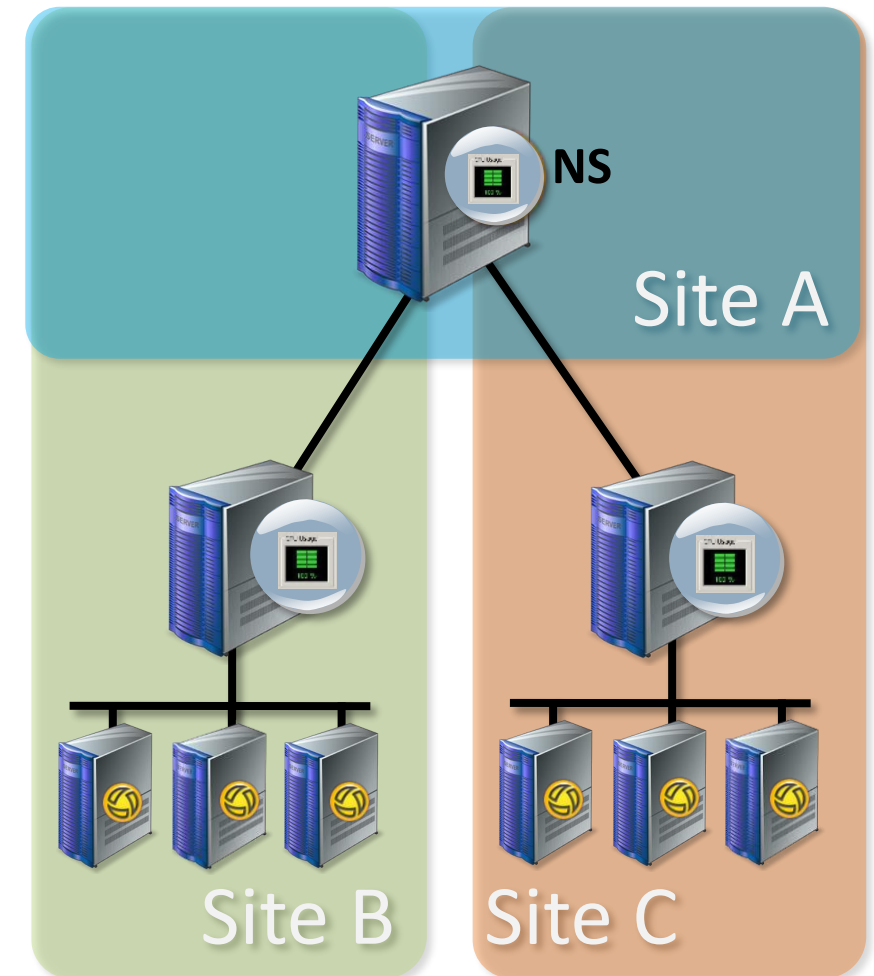
- Supported site server operating systems (version 8.1):
 - Microsoft Windows Server 2008 R2 x64
 - Microsoft Windows Server 2012 R2 x64
 - Microsoft Windows Server 2016



Monitor Services Implementation



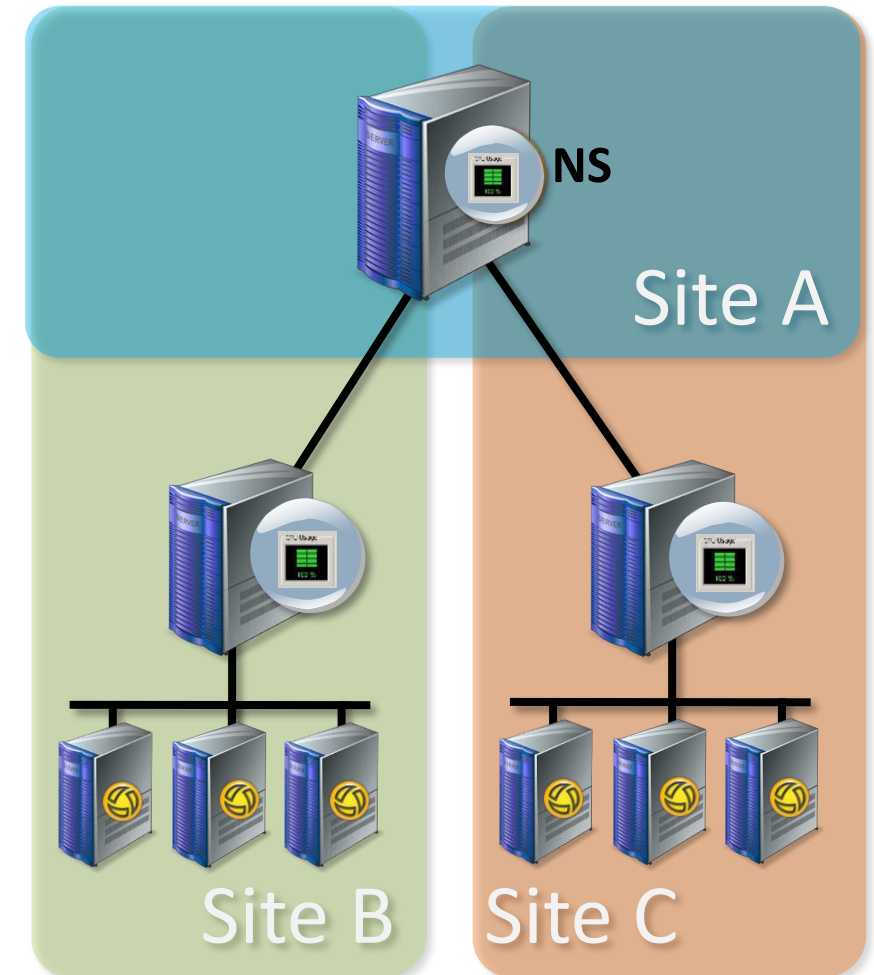
- Supported site server operating systems (version 8.1):
 - Microsoft Windows Server 2008 R2 x64
 - Microsoft Windows Server 2012 R2 x64
 - Microsoft Windows Server 2016
- Policies do not require any special configuration to work with a monitor service on one or more site servers.



Monitor Services Implementation



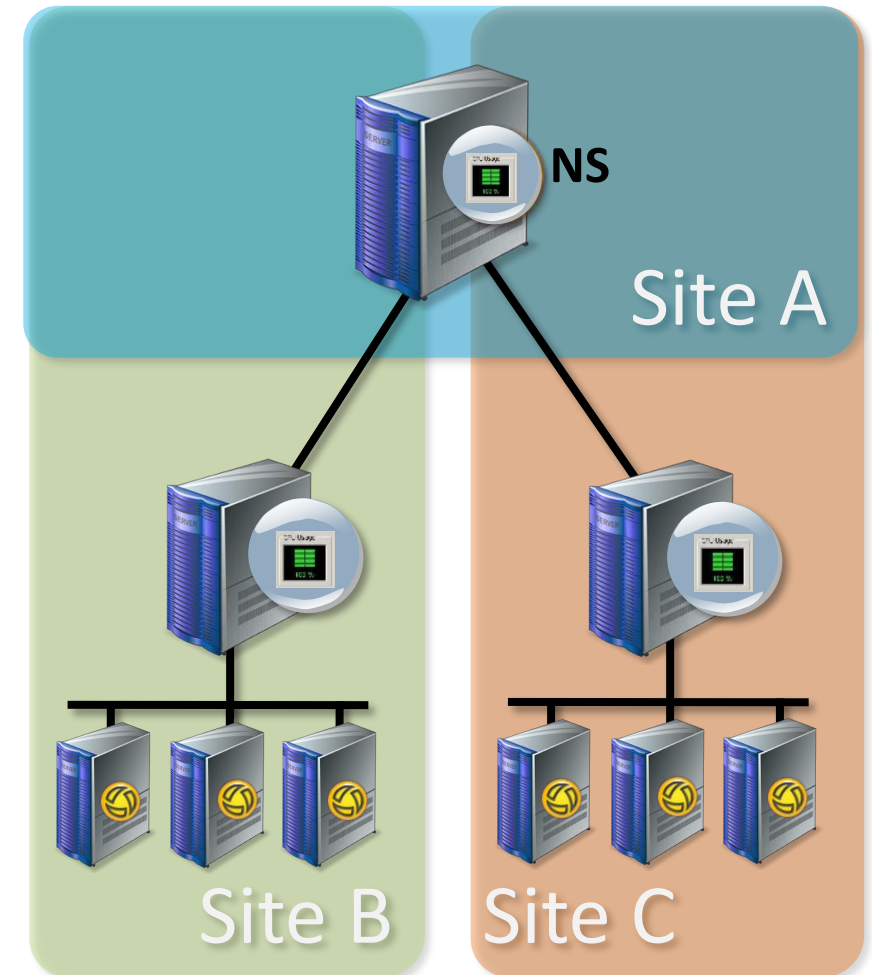
- Supported site server operating systems (version 8.1):
 - Microsoft Windows Server 2008 R2 x64
 - Microsoft Windows Server 2012 R2 x64
 - Microsoft Windows Server 2016
- Policies do not require any special configuration to work with a monitor service on one or more site servers.
- Only install monitor service on a computer that is secure and trusted.
 - The security settings of the Notification Server computer must also apply to the site server computer.



Monitor Services Implementation



- Supported site server operating systems (version 8.1):
 - Microsoft Windows Server 2008 R2 x64
 - Microsoft Windows Server 2012 R2 x64
 - Microsoft Windows Server 2016
- Policies do not require any special configuration to work with a monitor service on one or more site servers.
- Only install monitor service on a computer that is secure and trusted.
 - The security settings of the Notification Server computer must also apply to the site server computer.
- Minimum Requirement on the site server:
 - Symantec Management Agent
 - The Pluggable Protocols Architecture (PPA)
 - The credential manager client computer component



ITMS Component Implementation & Design



ITMS Component Ratios



Components with ITMS	Range
Managed Computers per Notification Server (NS)	
Site Servers per NS (Task/Package Services)	
Network Boot Servers per NS	
Clients per Site Server	
PXE sessions per Network Boot Server (concurrent)	
Console sessions per NS (concurrent)	
Internet Gateway	

ITMS Component Ratios



Components with ITMS	Range
Managed Computers per Notification Server (NS)	1-35,000
Site Servers per NS (Task/Package Services)	
Network Boot Servers per NS	
Clients per Site Server	
PXE sessions per Network Boot Server (concurrent)	
Console sessions per NS (concurrent)	
Internet Gateway	

ITMS Component Ratios



Components with ITMS	Range
Managed Computers per Notification Server (NS)	1-35,000
Site Servers per NS (Task/Package Services)	1-600
Network Boot Servers per NS	
Clients per Site Server	
PXE sessions per Network Boot Server (concurrent)	
Console sessions per NS (concurrent)	
Internet Gateway	

ITMS Component Ratios



Components with ITMS	Range
Managed Computers per Notification Server (NS)	1-35,000
Site Servers per NS (Task/Package Services)	1-600
Network Boot Servers per NS	1-300
Clients per Site Server	
PXE sessions per Network Boot Server (concurrent)	
Console sessions per NS (concurrent)	
Internet Gateway	

ITMS Component Ratios



Components with ITMS	Range
Managed Computers per Notification Server (NS)	1-35,000
Site Servers per NS (Task/Package Services)	1-600
Network Boot Servers per NS	1-300
Clients per Site Server	1-7,500
PXE sessions per Network Boot Server (concurrent)	
Console sessions per NS (concurrent)	
Internet Gateway	

ITMS Component Ratios



Components with ITMS	Range
Managed Computers per Notification Server (NS)	1-35,000
Site Servers per NS (Task/Package Services)	1-600
Network Boot Servers per NS	1-300
Clients per Site Server	1-7,500
PXE sessions per Network Boot Server (concurrent)	1-200
Console sessions per NS (concurrent)	
Internet Gateway	

ITMS Component Ratios



Components with ITMS	Range
Managed Computers per Notification Server (NS)	1-35,000
Site Servers per NS (Task/Package Services)	1-600
Network Boot Servers per NS	1-300
Clients per Site Server	1-7,500
PXE sessions per Network Boot Server (concurrent)	1-200
Console sessions per NS (concurrent)	1-100 (75 Mgmt. + 25 Asset)
Internet Gateway	

ITMS Component Ratios



Components with ITMS	Range
Managed Computers per Notification Server (NS)	1-35,000
Site Servers per NS (Task/Package Services)	1-600
Network Boot Servers per NS	1-300
Clients per Site Server	1-7,500
PXE sessions per Network Boot Server (concurrent)	1-200
Console sessions per NS (concurrent)	1-100 (75 Mgmt. + 25 Asset)
Internet Gateway	15 to 20K Concurrent

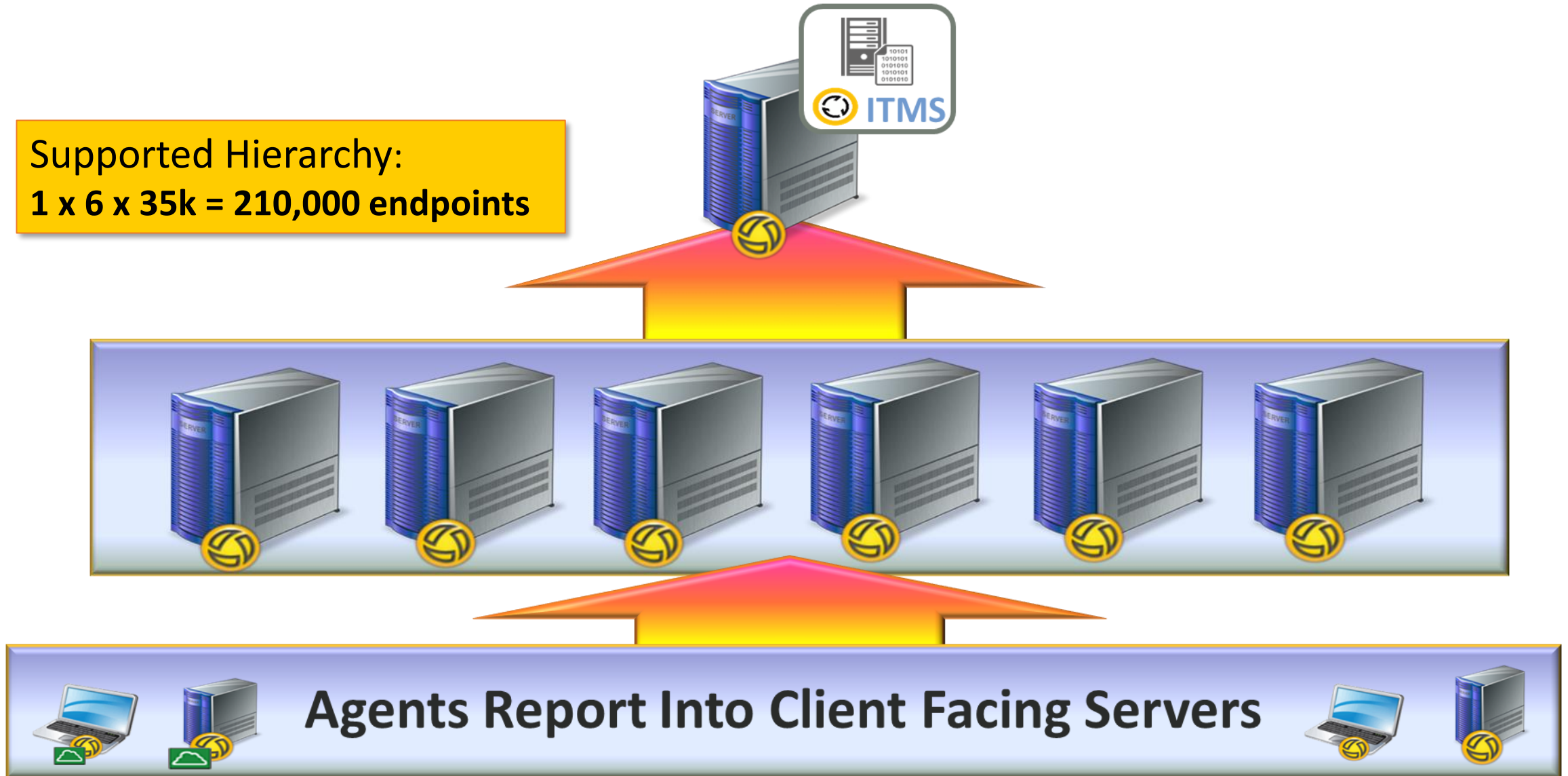
ITMS Hierarchy Ratio

Supported Hierarchy:
1 x 6 x 35k = 210,000 endpoints



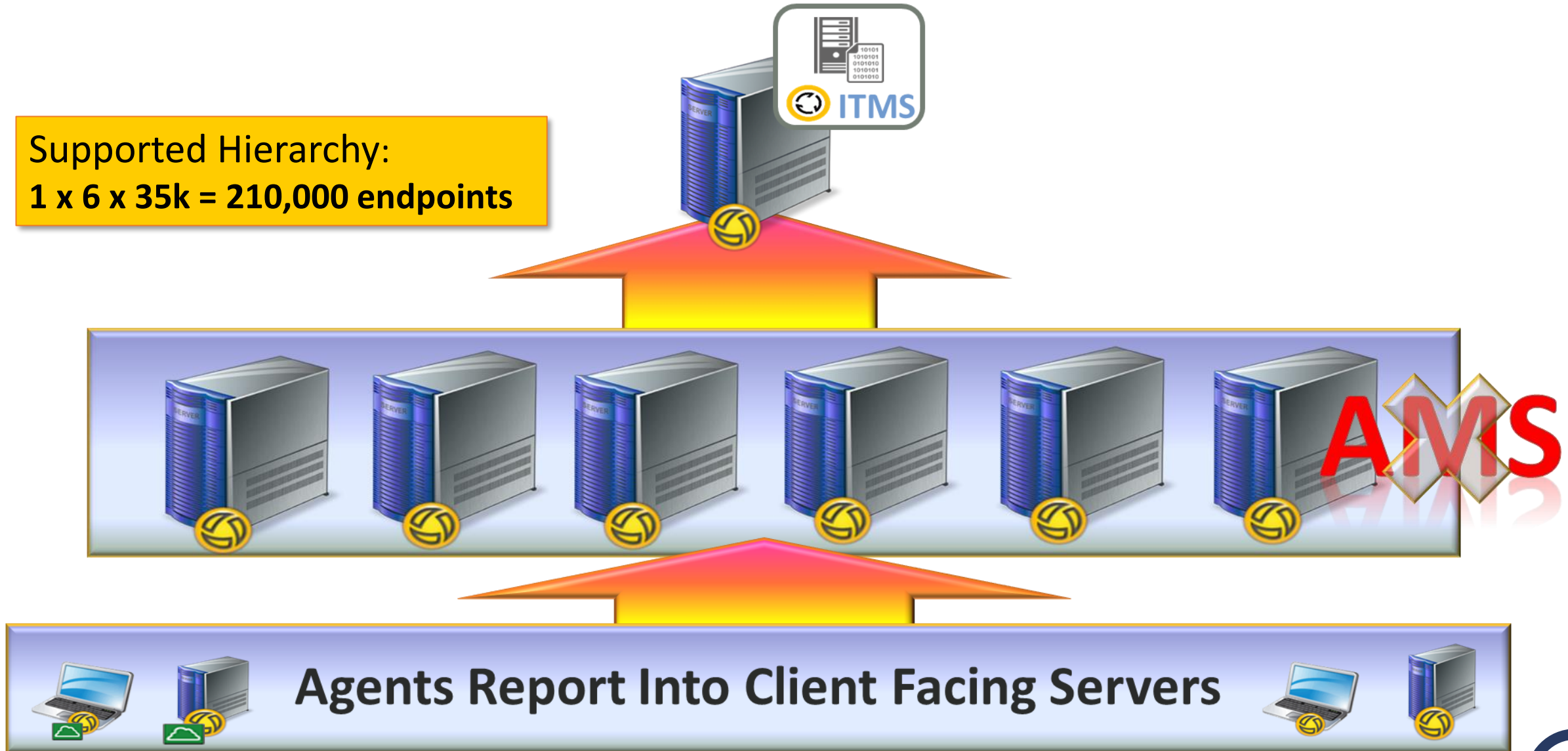
ITMS Hierarchy Ratio

Supported Hierarchy:
 $1 \times 6 \times 35k = 210,000$ endpoints



ITMS Hierarchy Ratio

Supported Hierarchy:
 $1 \times 6 \times 35k = 210,000$ endpoints



ITMS Hierarchy Ratio



Supported Hierarchy:
 $1 \times 6 \times 35k = 210,000$ endpoints

Less than 35,000 Endpoints?:

- Reduce the amount of Management Points
- Use Organizational Views/Groups instead
- Optimize Site Infrastructure
 - Use Constrained/Unconstrained
- Improves NS Performance and Reduces support costs



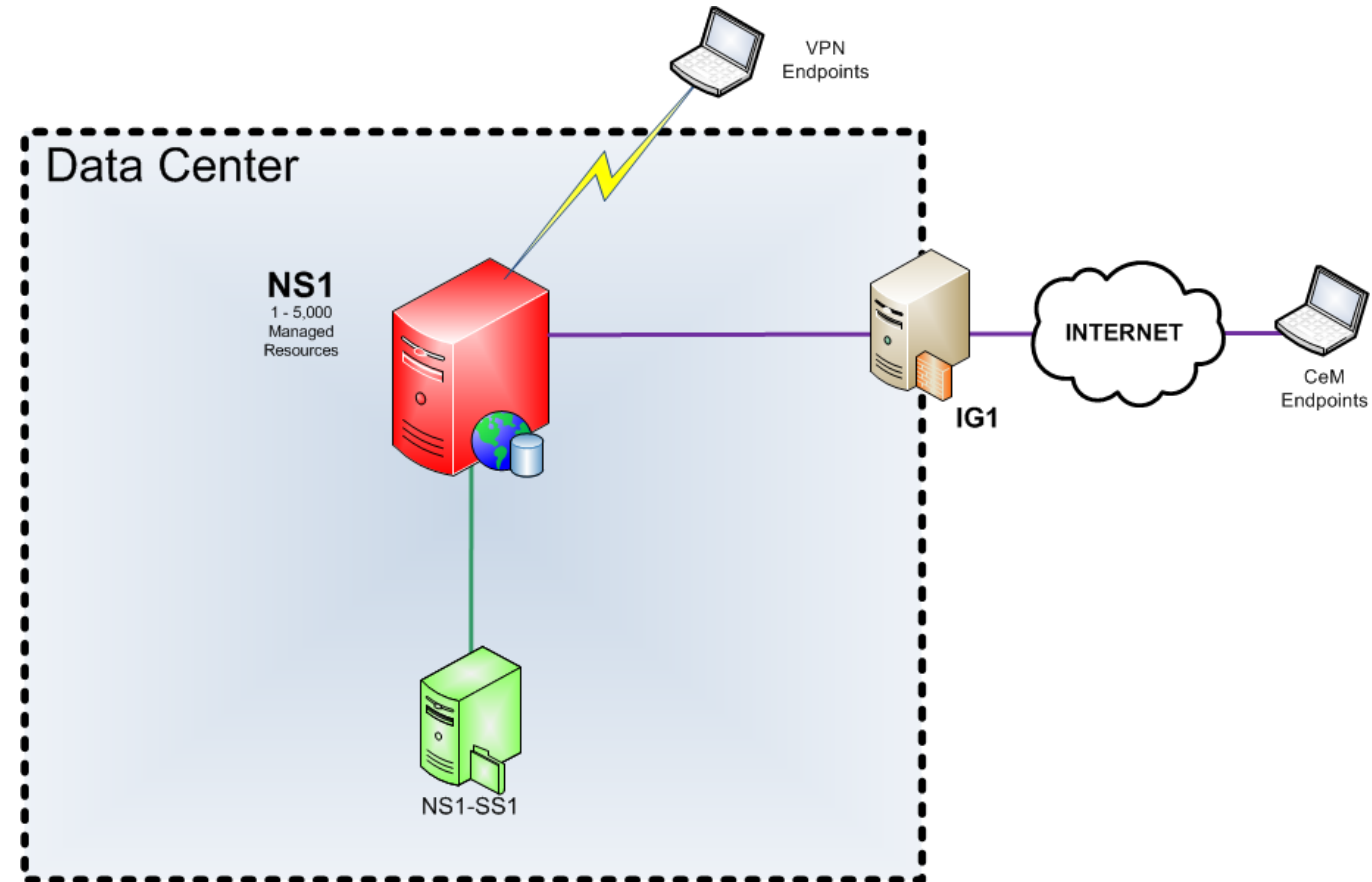
Agents Report Into Client Facing Servers



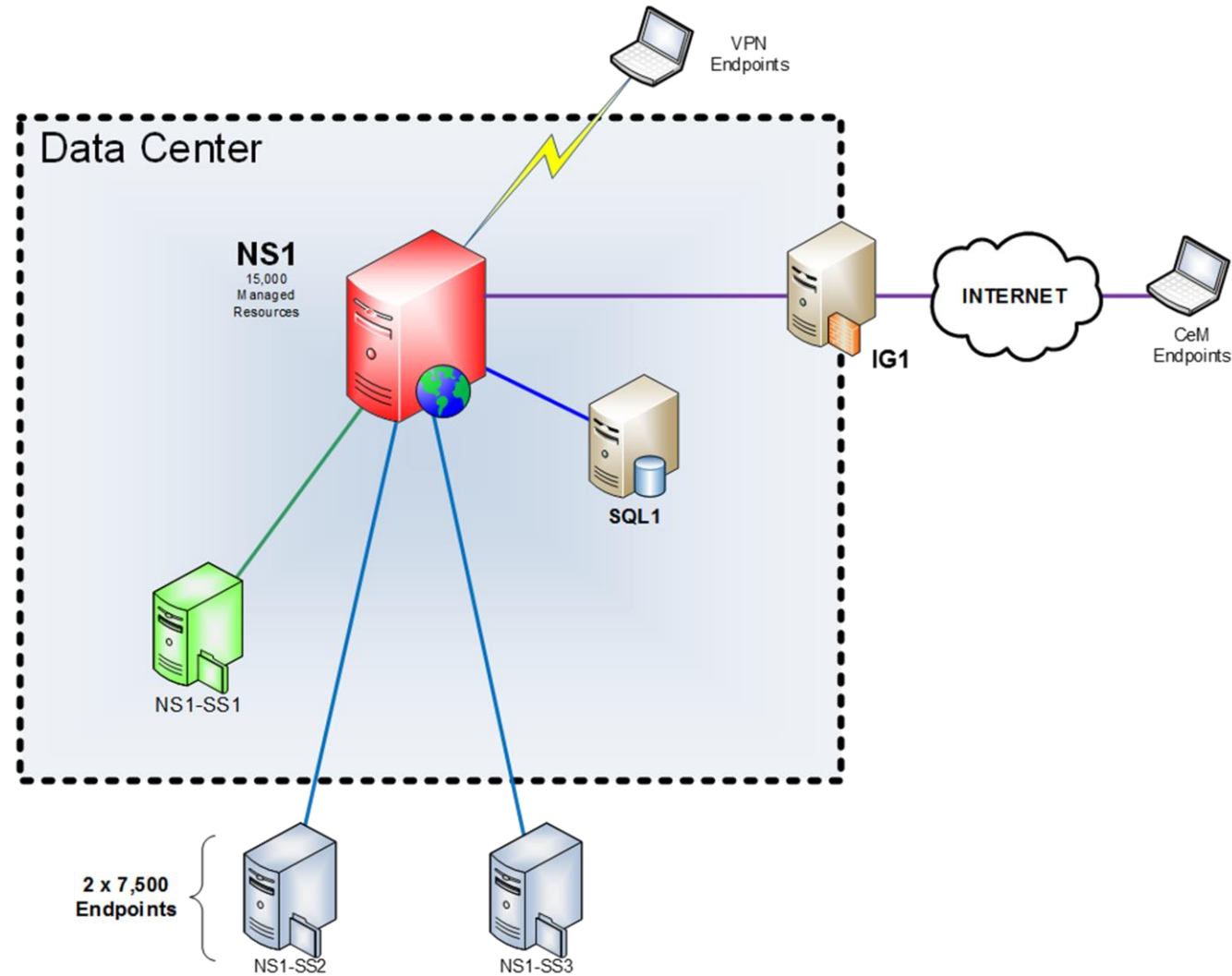
ITMS Topologies



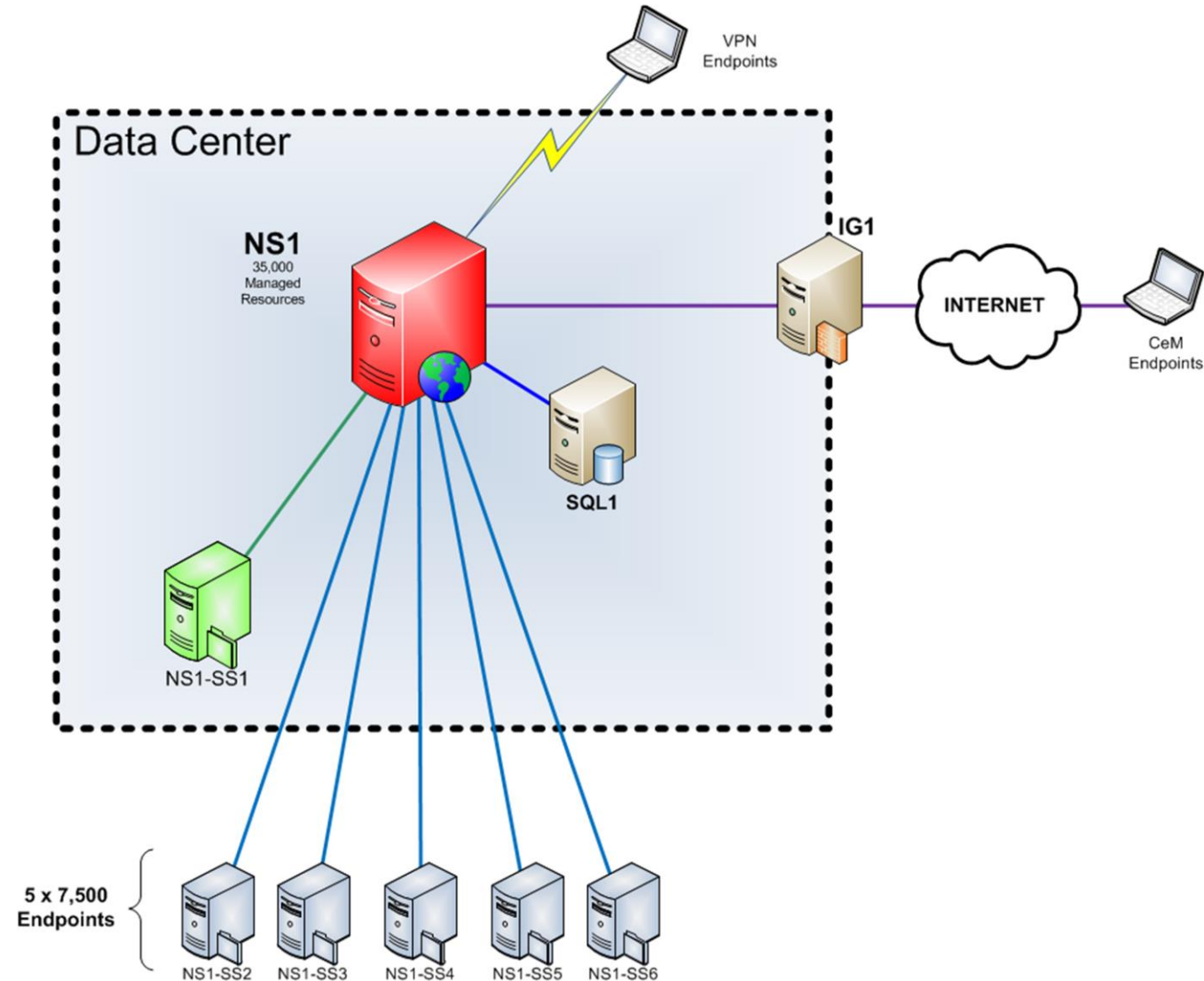
ITMS Topology - 5,000 endpoints



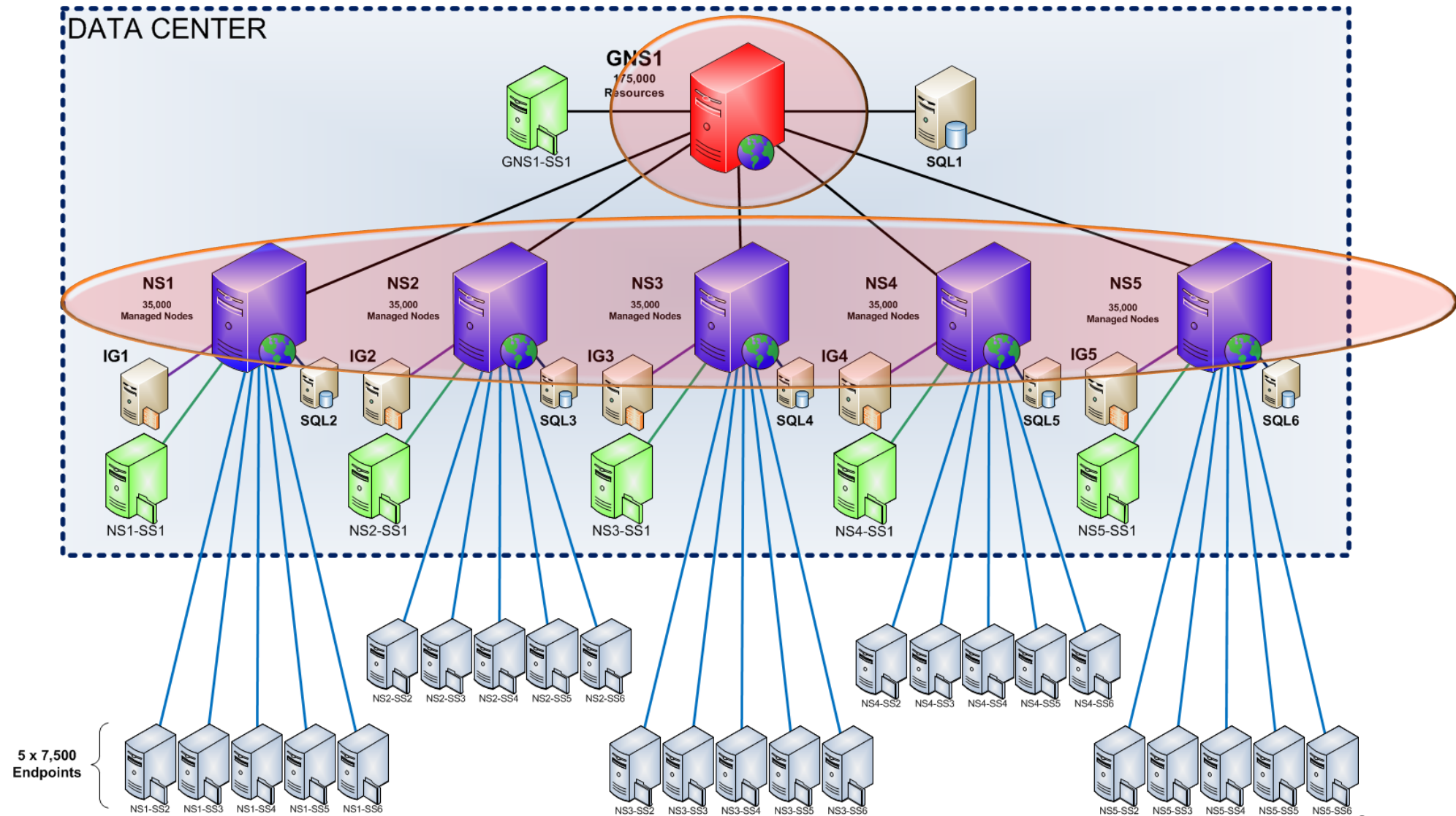
ITMS Topology - 15,000 endpoints



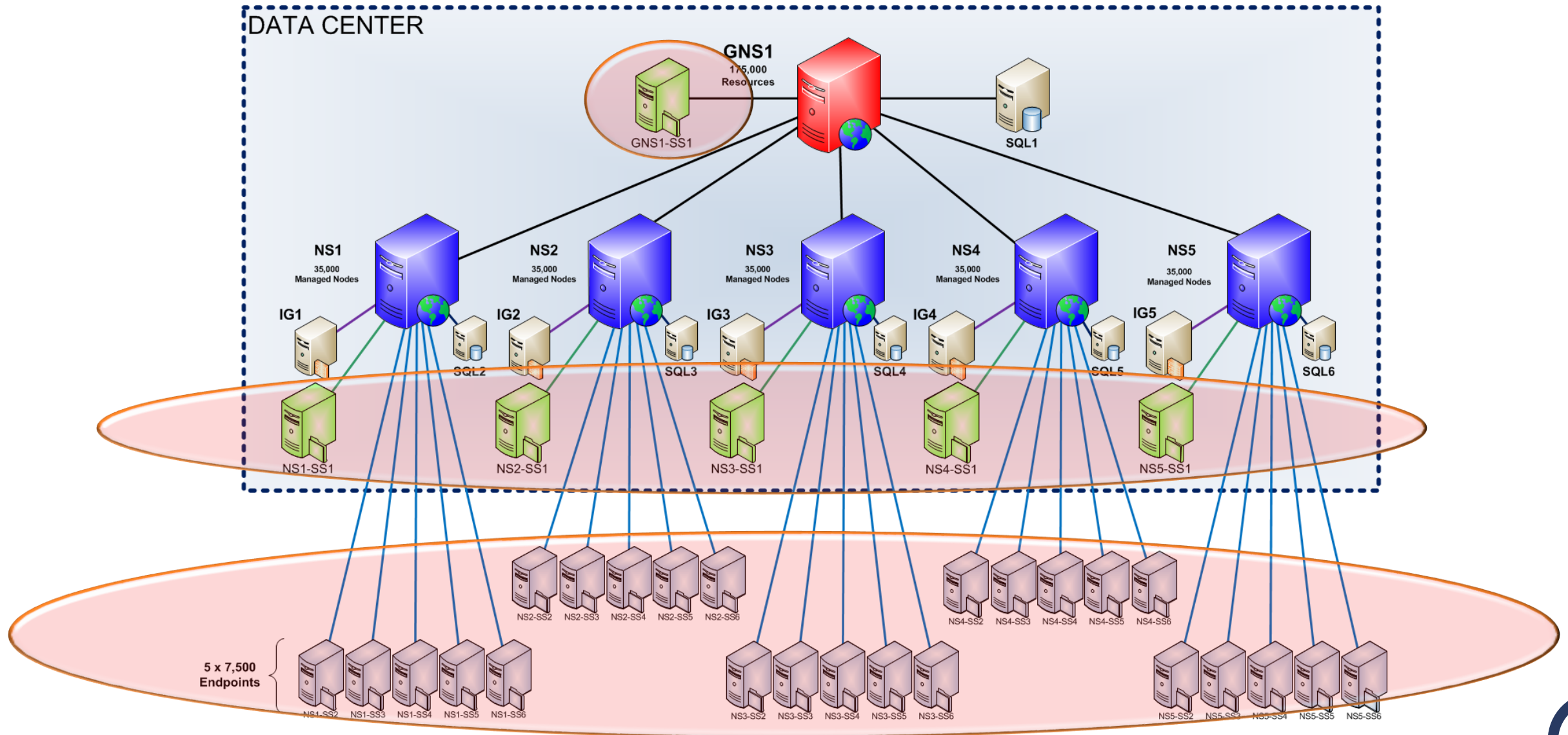
ITMS Topology - 35,000 endpoints



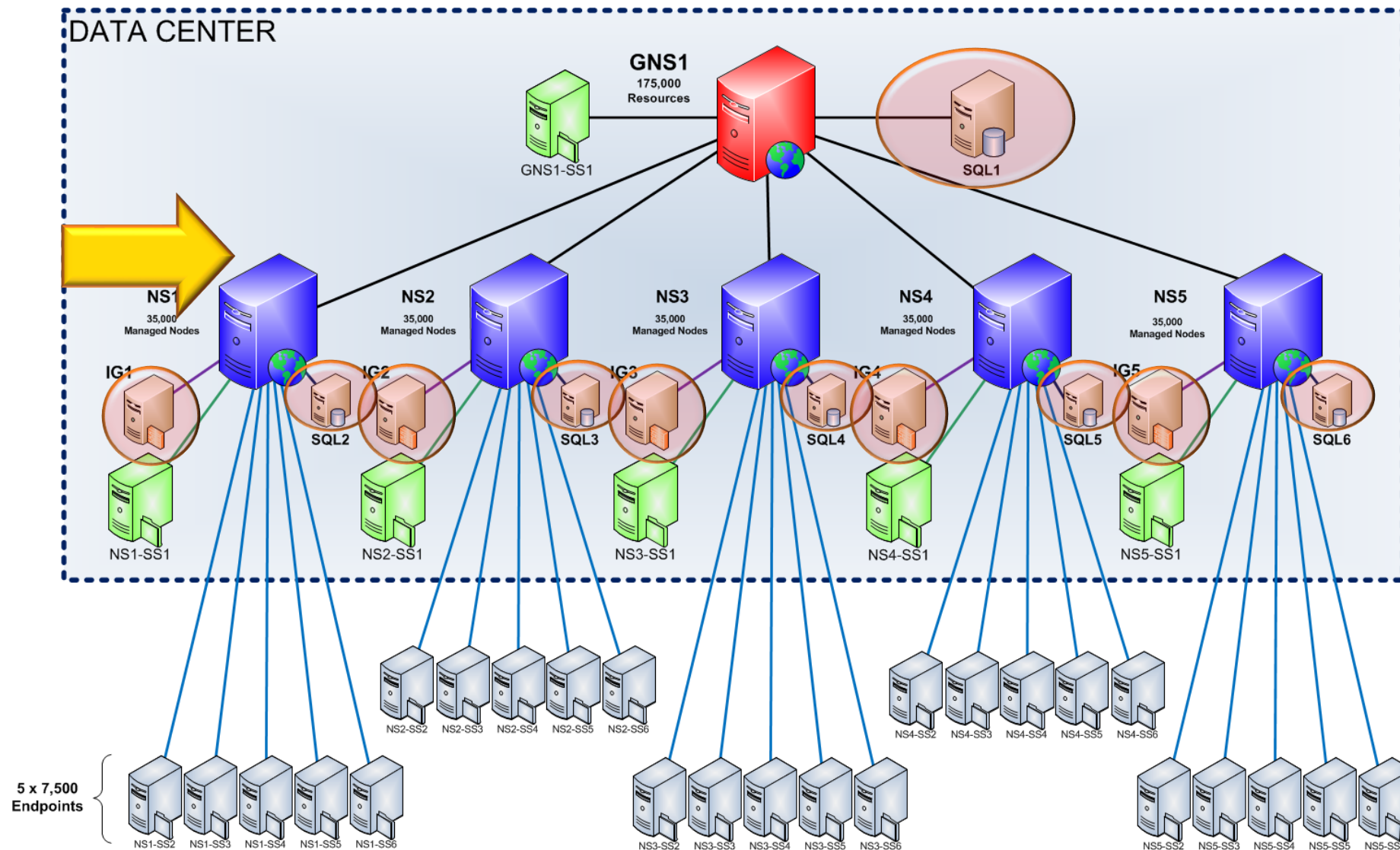
ITMS Topology - 175,000 endpoints



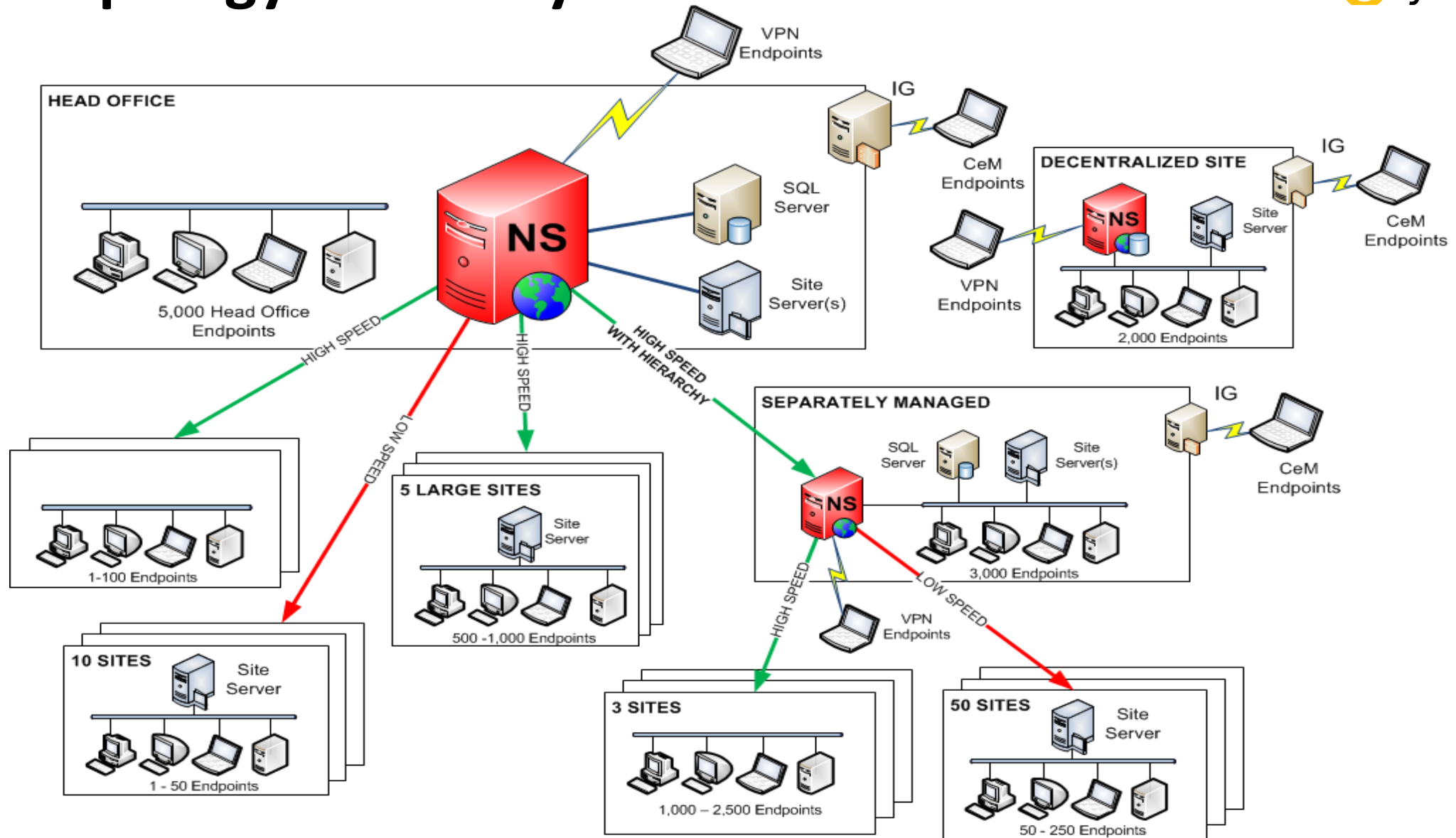
ITMS Topology - 175,000 endpoints



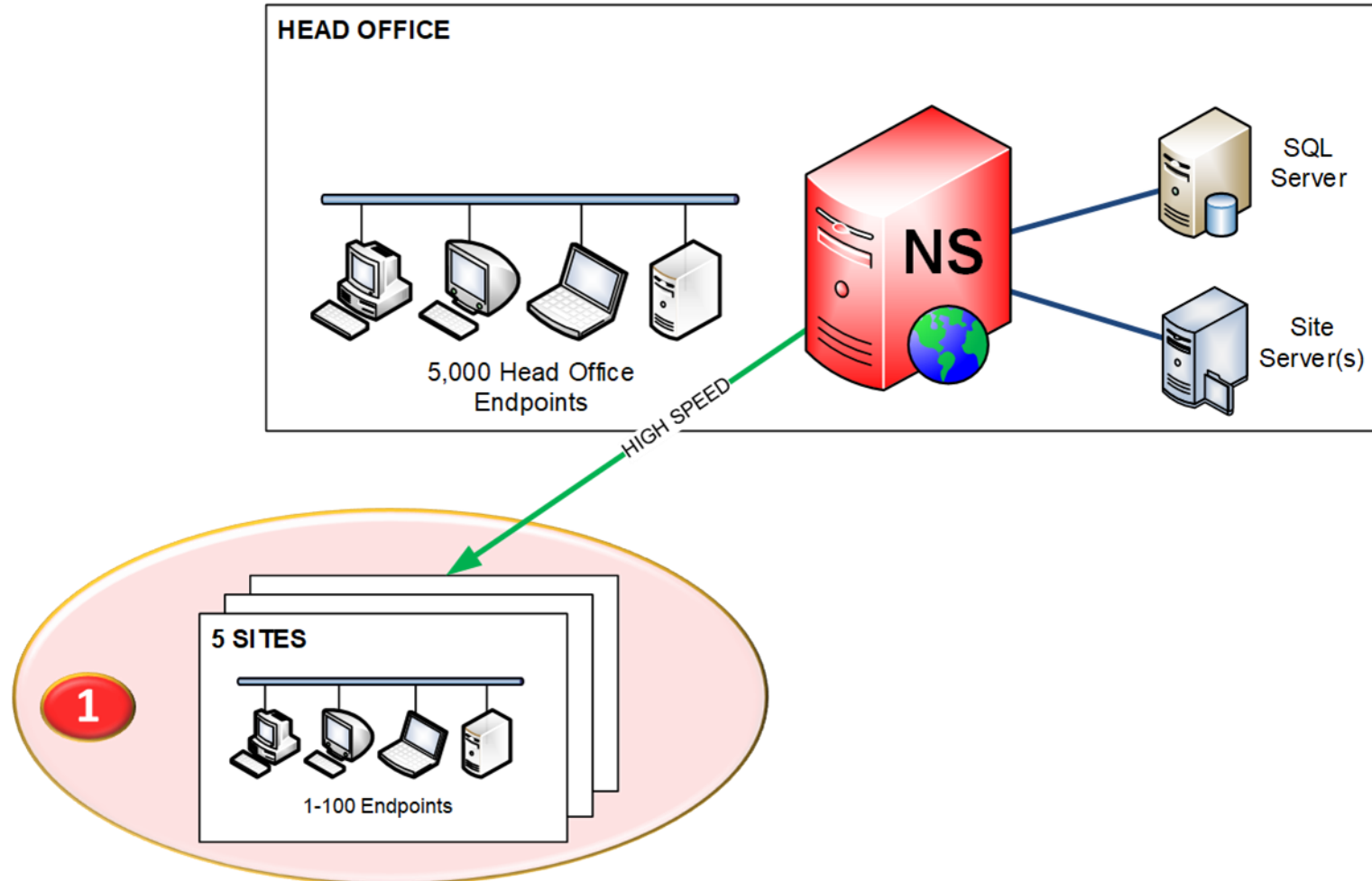
ITMS Topology - 175,000 endpoints



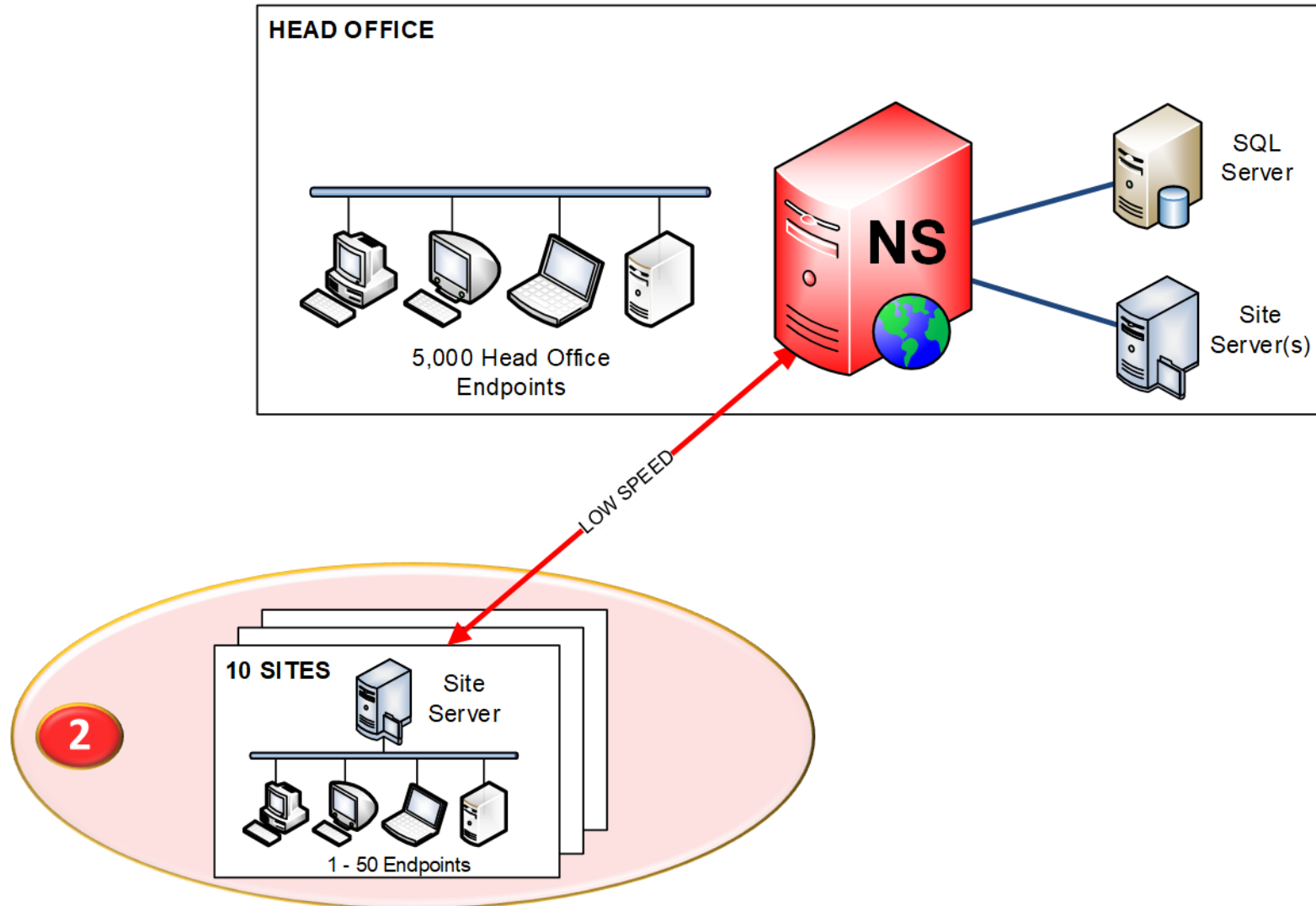
ITMS Topology Summary



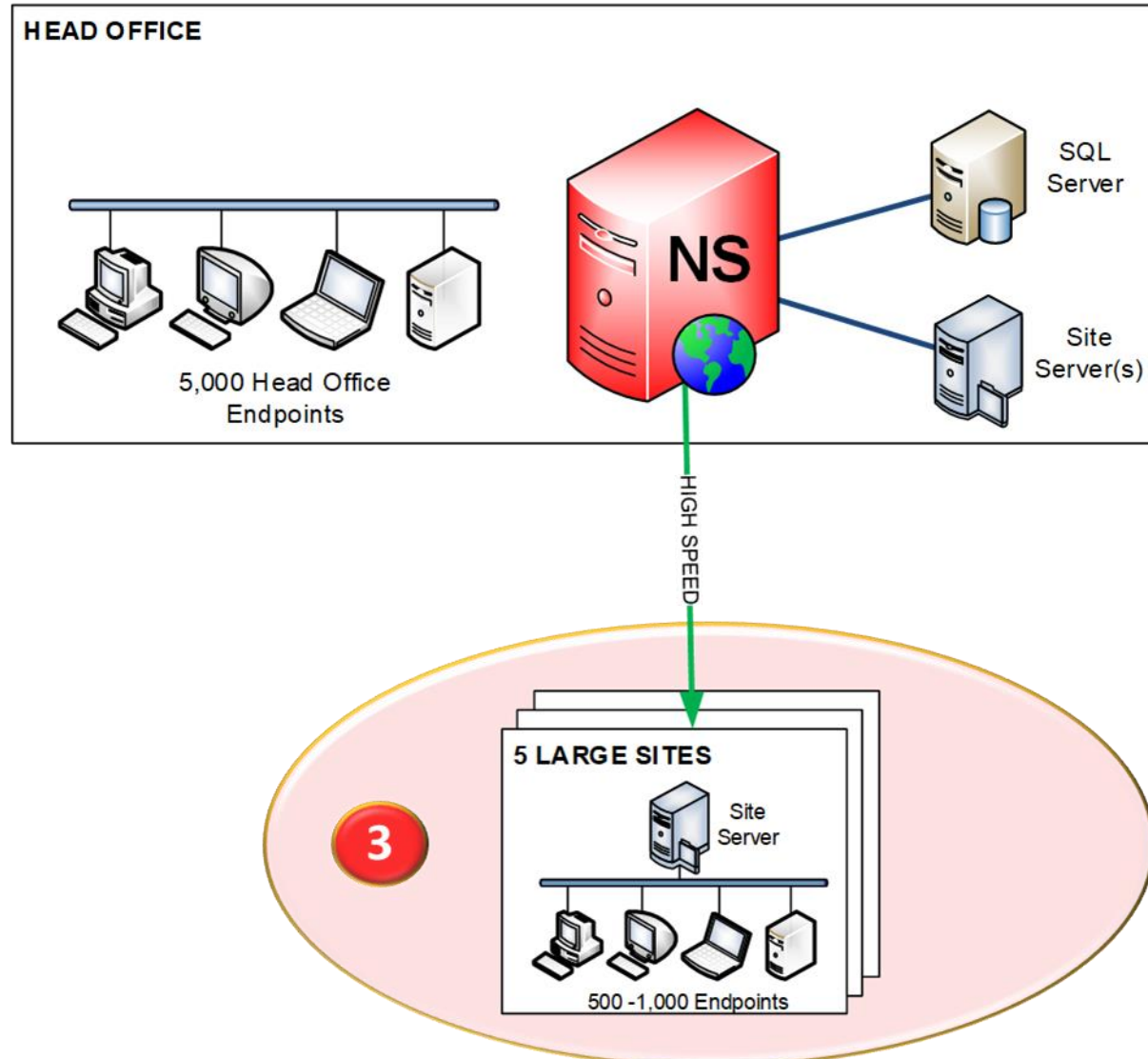
ITMS Topology Summary



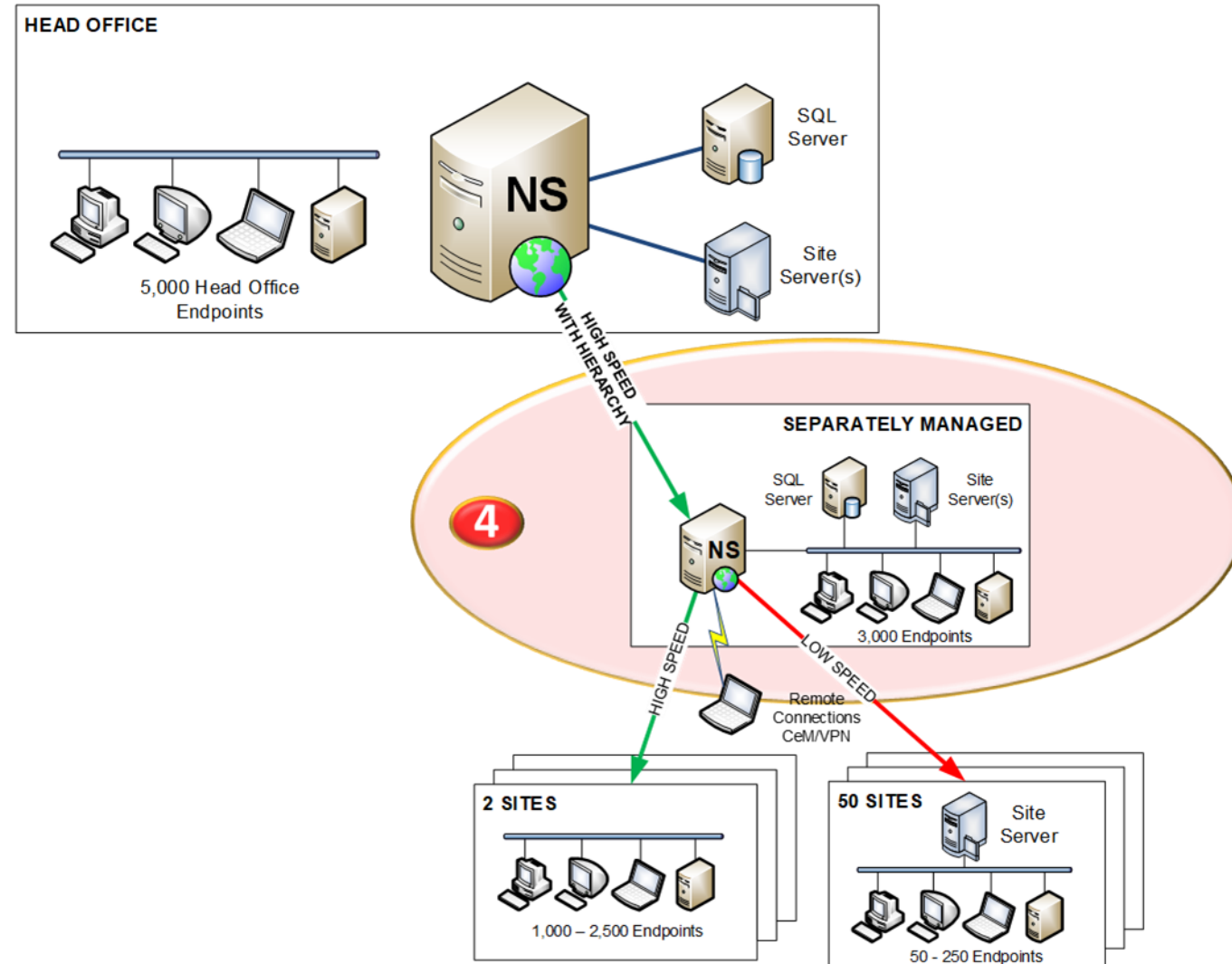
ITMS Topology Summary



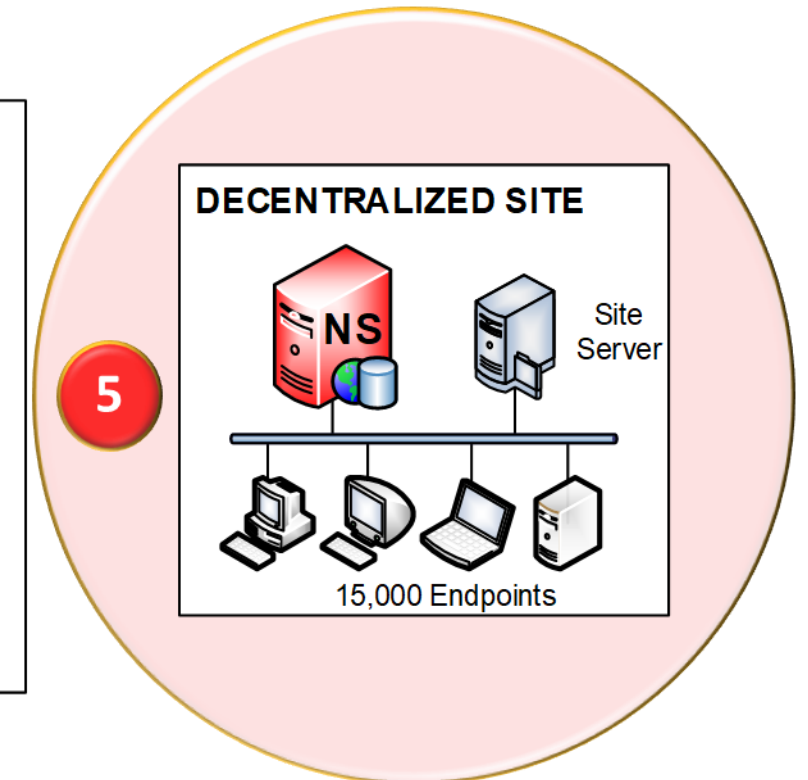
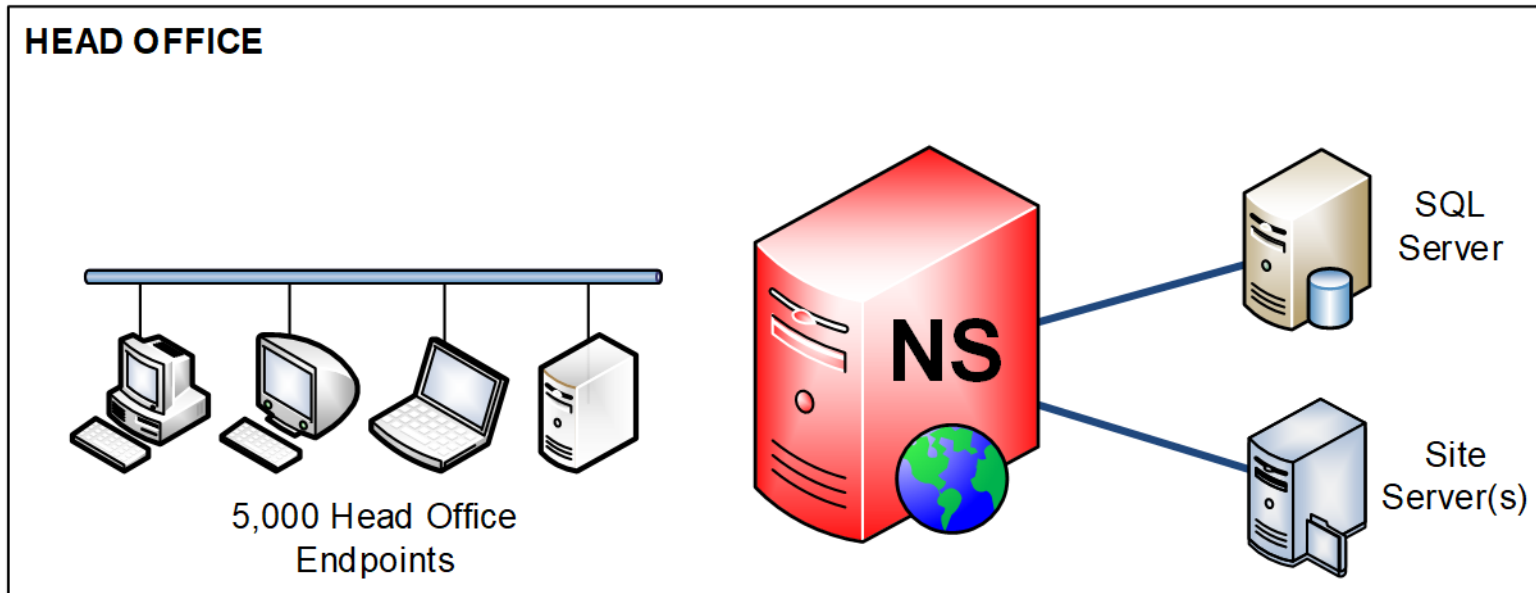
ITMS Topology Summary



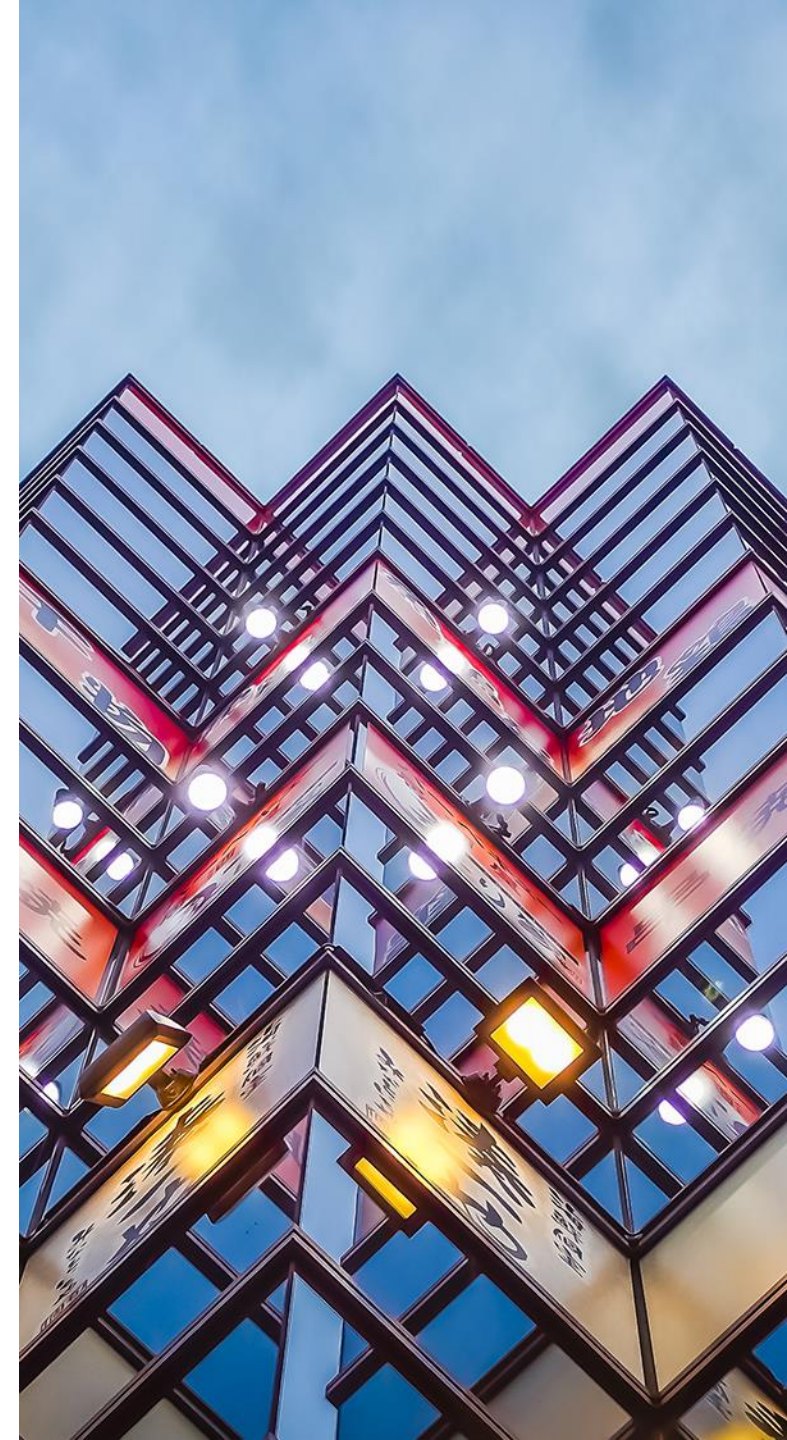
ITMS Topology Summary



ITMS Topology Summary



Additional Information



Additional Resources and Summary



If you would like to know more about **IT Management Suite** please visit:

- **Product Overviews:** <https://www.symantec.com/products/it-management-suite>
- **Documentation:** https://support.symantec.com/en_US/article.DOC11076.html
- **Data Sheet:** <https://www.symantec.com/products/endpoint-management>
- **Community:** <http://www.symantec.com/connect/endpoint-management>
- **Symantec Help Center:** https://help.symantec.com/home/ITMS8.5?locale=EN_US



Q&A





Thank You!

Tomas Chinchilla
Brian Sheedy

